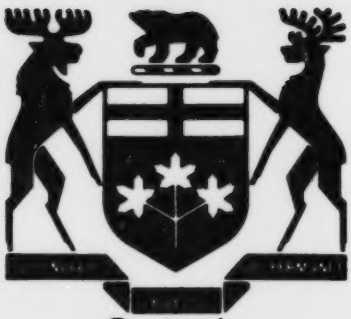

Ontario Energy Board

Ontario
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Board

H.R. 12

REPORT TO THE

MINISTER OF ENERGY

ONTARIO HYDRO

BULK POWER RATES FOR 1984

H.R. 12

August 31, 1983

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Ontario
Energy
Board

14 Carlton Street
Toronto, Ontario
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416/598-4000

August 31, 1983

The Honourable Philip Andrewes
Minister of Energy
12th Floor
56 Wellesley Street West
Toronto, Ontario
M7A 2B7

Dear Mr. Minister:

In accordance with a letter of reference dated April 13, 1983, the Ontario Energy Board conducted hearings to investigate, examine and report on the proposal of Ontario Hydro, dated April 11, 1983, to change its rates and charges to its customers effective January 1, 1984.

The attached report of the Board is hereby respectfully submitted.

ONTARIO ENERGY BOARD

R. R. Perdue, Q.C.
Presiding Member

J. A. Dunn
Member

D. H. Thornton, Q.C.
Member

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INTRODUCTION

By letter dated April 11, 1983, Ontario Hydro ("Hydro" or the "Corporation") forwarded to the Minister of Energy (the "Minister") rate proposals for 1984 which would increase net revenue by $461 million over 1983. A copy of this letter is included in Appendix 'A'. Hydro expected that $124 million of the increase would result from higher sales and $337 million would be realized through proposed rate increases. Hydro stated that the major factors affecting the 1984 revenue requirement were: load and system growth ($506 million increase), the economic environment ($162 million increase), and changes in financial, depreciation, and accounting policies ($207 million decrease).

By letter dated April 13, 1983, the Minister referred the Hydro submission to the Ontario Energy Board (the "Board"). A copy of this letter (the "letter of reference" or the "reference") is also included in Appendix 'A'.

The costing and pricing methodologies incorporated in these rate proposals are basically those included in Hydro's 1983 rates submission which the Board provisionally recommended for acceptance. The feature of seasonal differentiation of rates was not included in the 1984 proposal as it was deferred at the request of the Ontario government following last year's hearing. Some modifications were introduced in the current submission which were intended to

reflect the Board's previous recommendations, and to take into account concerns expressed by the government respecting economic impacts.

Hydro's proposal for 1984 rates was based on an economic climate which it perceived to be recessionary and "unprecedented in the post-war era", characterized by rapidly rising operating costs, lower than planned sales, generating capacity surpluses and the need for restraint in rate increases.

Hydro stated that its proposal would result in an average increase of about 9.7 percent for the 321 municipal utilities and the approximately 100 industrial customers.

The reference directed the Board to examine the manner in which Hydro had determined its 1984 revenue requirement and whether it had been kept as low as feasible, consistent with the maintenance of Hydro's financial soundness, its ability to attract capital at favourable rates and the reliability and quality of its service to its customers. Included with the terms of reference and forming part of Appendix 'A', was a letter from the Treasurer of Ontario to the Chairman of Hydro concerning Hydro's borrowing procedures and net income determination.

The Board was also instructed to investigate whether the proposed modifications to the policies and practices respecting power costing and rate making, examined in H.R. 11, (the 1983 rates review) were reasonable and appropriate. In accordance with past practice, system expansion was excluded from the review.

The Board issued a Procedural Order dated April 18, 1983, which gave Hydro instructions as to service and publication of a Notice of Hearing and which contained instructions to parties intending to intervene as to the pre-filing of evidence and as well notice of the pre-hearing conference (held on May 18, 1983). The order also set May 31, 1983 as the date for commencement of the hearing which continued until June 30, after which, argument was received.

Notices of Intention to Intervene were received from the following:

Association of Major Power Consumers in Ontario ("AMPCO")

The Consumers' Gas Company Ltd.

Sean Conway, MPP

Dow Chemical Canada Inc.

Energy Probe

The Exolon Company of Canada Limited

The Hydro-Electric Commission of the Corporation of the City of North York

Hydro Mississauga

Inco Limited

Line 115 Group ("115 kv Group")

Northern and Central Gas Corporation Limited

Ontario Municipal Electric Association ("OMEA")

Ontario Natural Gas Association ("ONGA")

The Hydro-Electric Commission of the City of Ottawa

Public Utilities Commission of the City of Belleville

Public Utilities Commission of the Borough of Scarborough

Public Utilities Commission of the City of Kingston

The Society of Ontario Hydro Management and Professional Staff (the "Society")

Union Carbide Canada Limited

Union Gas Limited

Urban Development Institute ("UDI")

Ontario Association of Physical Plant Administrators

In addition to these filed interventions, the Board received numerous letters expressing concern about the magnitude of the rate increase and the rate restructuring.

Appearing at the hearing were:

Pierre Genest, Q.C.) Ian A. Blue)	On behalf of Ontario Hydro
Brian Armstrong, Q.C.	Board Counsel
Jeffrey Davies	On behalf of AMPCO
Frank L. Riley	On behalf of Inco Limited
William Gardner	On behalf of the Consumers' Gas Company
David Poch	On behalf of Energy Probe
Maurice Green	On behalf of the Society of Hydro Management and Professional Staff
Sean Conway, MPP	On behalf of the communities surrounding Deep River
B. Fleming	On behalf of Hydro Mississauga
H. Zimmer	On behalf of the 115 kv Group
Keith Bryan	On behalf of Northern and Central Gas Corporation Limited

Alan Schwartz	On behalf of OMEA
Robert Howe	On behalf of ONGA
Aubrey Butler	On behalf of Union Gas
Charles Rhodes	On behalf of the UDI
Henry B. Arndt	On behalf of Ontario Association of Physical Plant Administrators

A complete list of all witnesses is attached as Appendix 'B'.

The views of all participants, including those making oral presentations and those expressing concerns by letter, were carefully considered by the Board in reaching its conclusions. Only the views of Board Counsel and the intervenors who submitted argument are summarized in Appendix 'C' of this report.

THE ECONOMIC OUTLOOK

Introduction

Hydro's economic forecast for its 1984 rate submission is based on its "Economic Outlook, Winter Review - Summary, February 1983" which was subsequently revised and updated by Hydro's "Economic Outlook, Spring Review, May 1983". As a result of the update, Hydro's witnesses testified that net income in 1983 would increase by some $11 million and the 1984 revenue requirement would be reduced by $53 million.

Hydro's witnesses stated that its forecast of key economic indicators was based in part on external sources of macroeconomic information, the more important being Informetrica, Data Resources of Canada ("DRI") and the Conference Board of Canada.

Board staff submitted an economic forecast prepared by Dr. de Bever of Chase Econometrics Canada ("Chase"), entitled "The Short-term Economic Outlook for Canada and Ontario", dated May 16, 1983. Dr. de Bever, while giving evidence, updated certain aspects of his economic forecast including the 1983 and 1984 Consumer Price Index ("CPI") for the U.S., the 1983 CPI for Canada and Ontario, and Canadian prime and long-term interest rates for 1983 and 1984.

Dr. Chambers of G. M. Stamm Economic Research Associates ("Stamm"), a witness for AMPCO, also submitted an economic forecast dated May, 1983. Dr. Chambers, unlike

Hydro and Chase, did not use mathematical models in his forecasting and said that his firm did not hold itself out to be a macroeconomic forecasting service.

Mr. Genest, in argument, stated that, as a result of Hydro's review of the Canadian National Accounts for the first quarter of 1983 issued by Statistics Canada on June 21, 1983, it had revised its 1983 growth forecast for Gross National Product ("GNP") from 1.5 percent to 2.7 percent which is similar to the Chase forecast of 2.6 percent. However, Hydro did not revise its 1984 GNP growth rate of 3.0 percent.

Table 1 on the following page compares the key economic indicators of Hydro and Chase for 1983 as forecast and updated in H.R. 11, compared to the updated forecasts for 1983 as testified to in this hearing. Table 2 on page 10 shows a comparison of the updated forecasts of the 1984 key economic indicators of Hydro, Chase, Stamm, the Conference Board of Canada, DRI and Informetrica.

The Board views economic forecasting as an imprecise process and the magnitude of the imprecision, particularly over the past three years, has been clearly affected by the volatile economic environment. A much more severe recession than had been forecast by the macroeconomic services occurred during 1981 and 1982. However, in late 1982 and the first six months of 1983 there has been a significant change in the economy. The recovery that has occurred so far this year is more remarkable when a comparison is made

TABLE 1

HYDRO AND CHASE
1983 KEY ECONOMIC INDICATORS
H.R. 11 COMPARED TO H.R. 12

FORECAST INDICATORS %	H.R. 11 FORECASTS FOR '83 (UPDATED)		H.R. 12 FORECASTS FOR '83 (UPDATED)	
	HYDRO	CHASE	HYDRO	CHASE
CPI (Canada)	12.0	9.1	6.5	6.5
CPI (Ontario)	12.0	8.5	6.5	6.8
CPI (U.S.)	10.0	6.8	4.0	3.3
Real GNP (Canada)	3.0	5.4	2.7	2.6
Real GNP (U.S.)	N/A	4.1	2.0	2.5
Real GPP* (Ontario)	2.0	4.5	1.5	2.8
Interest Rates				
Prime	17.88	17.3	11.6	11.6
Long Term	15.88	15.5	11.8	11.0
Real Rate of Interest	5.88**	8.2**	5.1	5.1
Canadian $ in U.S. Funds	.826	.83	.81	.81

* Gross Provincial Product
**not given but determined by deducting CPI from prime interest rate

TABLE 2

H.R. 12
COMPARISON OF 1984 KEY ECONOMIC INDICATORS

FORECAST INDICATORS %	ONTARIO HYDRO (AS UPDATED) DURING THE HEARING	CHASE ECONOMETRICS (AS UPDATED) DURING THE HEARING	G.M. STAMM ECONOMIC RESEARCH ASSOCIATES MAY 1983	CONFERENCE BOARD OF CANADA APRIL 1983	DATA RESOURCES OF CANADA (DRI) APRIL 1983	INFORMETRICA MARCH 1983
CPI (Canada)	6.0	6.4	5.0	4.9	5.3	4.5
CPI (Ontario)	6.0	6.7	5.0 (Toronto)	N/A	N/A	N/A
CPI (U.S.)	5.5	5.1	3.0	N/A	N/A	N/A
Real GNP (Canada)	3.0	4.1	5.0	5.4	4.0	5.9
Real GNP (U.S.)	3.0	4.4	3.5	N/A	N/A	N/A
Real GPP (Ontario)	3.0	4.5	5.1	5.4	N/A	N/A
Interest Rates:						
Prime	11.0	10.7	9.5	N/A	N/A	N/A
Long Term	11.5	10.7	8.5	N/A	10.09	N/A
Real Interest Rates:						
Short Term	5.0	4.3	4.5*	N/A	N/A	N/A
Long Term	5.5	4.3	N/A	N/A	N/A	N/A
Canadian $ in U.S. funds	.815	.79	.82	.827	.824	.823

* not given but determined by deducting CPI from prime interest rate

between the 1983 forecast of economic variables made by Hydro and Chase in H.R. 11 and their 1983 updated forecasts submitted in this hearing as shown on Table 1.

There are a few significant variations between the Hydro and Chase forecasts as well as those of other major forecasters for 1984 as revealed on Table 2 and considering the impact of various key economic indicators for 1984, such as inflation, interest rates and the Canadian dollar, the Board cannot ignore these differences and must judge the reasonableness of the individual parts of Hydro's forecast as well as the forecast as a whole.

From an examination of Table 2 the major differences between Ontario Hydro's 1984 economic outlook and that of other major economic forecasters fall within the following areas.

Inflation

Hydro predicted an increase in the CPI for Canada of 6.0 percent in 1984 compared with 6.4 percent forecast by Chase and for Ontario, of 6.0 percent compared with 6.7 percent by Chase.

Although there has been a much lower rate of increase in the CPI over the last few months, it would appear that this deceleration will be reversed and that there will be a somewhat greater increase in the rate of inflation in 1984 over 1983. One of the contributing factors to this increase may be wage increases as government restraint programs are

due to expire in 1984. The Board concludes that 6.5 percent inflation for 1983 and 6.4 percent for 1984 for Canada is a reasonable expectation and recommends its acceptance.

Inflation in the U.S. has been traditionally lower than in Canada. Hydro forecast the 1983 U.S. CPI at 4.0 percent compared to Chase's 3.3 percent. For 1984, the rates are 5.5 percent for Hydro and 5.1 percent for Chase.

The Board is of the opinion that considering the normal spread between Canada and U.S. inflation rates the 1983 and 1984 rates as revised by Hydro for the U.S. seem reasonable.

The Board therefore recommends that, based on Hydro's sensitivity figures, the revenue requirement be decreased accordingly by $24 million.

Interest Rates

The average Bank of Canada prime interest rate forecast by Hydro for 1984 is 11.0 percent. The long-term interest rate is forecast at 11.5 percent. Chase forecast 10.7 percent for both prime and long-term debt. The only significant difference lies in the long-term rates and it is a variance of 0.8 percentage points. AMPCO submitted that Hydro's long-term interest rates should be reduced by one percentage point, while the OMEA supported Hydro's forecast.

Board Counsel noted that the substantial difference between the Hydro and Chase forecast for 1984 was in the area of real interest rates where Hydro predicted 5.0 percent for the short-term and 5.5 percent long-term and Chase forecast 4.3 percent for both short and long-term rates.

Mr. Armstrong argued that the evidence of Dr. de Bever was that, over the past 20 years, short-term real interest rates have only exceeded 5.0 percent in 1981 and 1982, which he categorized as a "time of severe recession" and he urged the Board to accept Dr. de Bever's forecast.

Hydro's evidence was that real interest rates would remain high and therefore economic recovery would be restrained during 1984 which is reflected in its forecast of 3.0 percent economic growth. The 1984 forecast of Chase for GNP and GPP as well as prime interest and real interest rates, seems to the Board to reflect more accurately the degree of economic recovery that is likely to occur. The Board notes that the long-term interest rates are largely dependent upon movements in U.S. bond rates, as well as the long-term prospect for Canadian inflation. Hydro seems to have a more pessimistic view of that relationship than Chase. However, it appears to the Board that it would be inconsistent to forecast real rates of 5.0 percent and 5.5 percent and assume that on the basis of the past year's experience, there would be appreciable economic recovery. It might even be possible that Hydro's modest figure of 3.0 percent growth for GNP would not be achieved on the basis of its own forecast for real interest rates.

The Board therefore concludes that long-term interest rates will be 11.0 percent for 1983 and 10.7 percent for 1984. Based on the Board's findings in connection with the rate of inflation, both the short-term and long-term real interest rates are assumed to be 4.3 percent.

The Board therefore recommends that the revenue requirement, based on Hydro's sensitivity figures, be reduced by $11 million.

Gross National Product and Gross Provincial Product

Hydro's revised forecast for the GNP growth is 2.7 percent in 1983 and 3.0 percent in 1984, compared to the Chase forecast of 2.6 percent for 1983 and 4.1 percent for 1984. Hydro's cumulative economic growth for 1983 and 1984 is 5.7 percent compared to that of Chase at 6.7 percent. Chase has a much more optimistic view of Canada's economic growth over the two year period.

The same holds true for the growth in GPP which Hydro forecast to be 1.5 percent for 1983 and 3.0 percent for 1984, with a cumulative total of 4.5 percent compared to Chase's forecast of 2.8 percent for 1983 and 4.5 percent for 1984 with a cumulative total of 7.3 percent.

Mr. Armstrong submitted that Hydro's forecast of 1984 growth in GNP for both the U.S. and Canada and GPP for Ontario are the lowest of all of major forecasting firms.

The OMEA recommended that Hydro's updated economic forecast for 1984 be accepted, save for Ontario GPP, and submitted that it should be increased by 2.0 percent from $49.985 billion to $50.985 billion.

AMPCO submitted that the GNP growth rate should be 1.8 percent in 1983 and the GPP growth rate should be

1.9 percent. For 1984, AMPCO submitted that the growth rate should be 5.0 percent for GNP and 5.1 percent for GPP.

ONGA generally accepted Hydro's economic forecast as did Energy Probe. Mr. Poch, however, urged the Board not to be overly optimistic in respect of the economic outlook for 1984.

Since the completion of the evidence the National Accounts for the first quarter of 1983 have been issued, containing preliminary figures for the second quarter. These indicate that the 1983 economy continues to improve and strengthen. Since the first quarter, consumer spending has increased dramatically and, among other areas, new car sales were up some 42 percent in June 1983 over June 1982. Consumer spending on other goods such as furniture and appliances showed even more substantial increases. Inflation in June held very close to the May figure of 5.4 percent.

Forecasters in general agree that it will be consumers who will lead the way to economic recovery, and this is occurring. The economic indicators are now more optimistic than those upon which Hydro based its forecast and the signs are for further improvement in 1983.

The Board is of the opinion from the evidence that Hydro's forecast of growth in Ontario's 1983 GPP is understated and therefore recommends that it should be revised upwards from 1.5 percent to 3.0 percent. The Board finds that Hydro's 1984 GPP growth forecast for Ontario is

also somewhat pessimistic in light of the predictions of other major forecasters shown on Table 2 and it therefore recommends that it be revised upwards from 3.0 percent to 4.0 percent.

Similarly, economic growth for Canada has improved substantially during the first five or six months of 1983. It is the Board's opinion that Hydro's forecast for GNP Canada of a 3.0 percent increase in 1984 is too low. Therefore, it seems likely that given the present economic climate and the continuing improvement in the Canadian economy, economic growth of 4.0 percent for 1984 can be achieved which would be 1.0 percentage point higher than Hydro's forecast. The Board however does accept Hydro's updated 1983 prediction of 2.7 percent which coupled with the Board's revision of the 1984 figure to 4.0 percent, brings a cumulative GNP growth for 1983 and 1984 of 6.7 percent.

The effect of these recommendations on the revenue requirement is discussed in the peak and energy demand section of this report.

Canadian Dollar

Hydro forecast the value of the Canadian dollar compared to the U.S. dollar would average 81¢ for 1983 and 81.5¢ U.S. for 1984, with Chase indicating 80¢ for 1983 and 79¢ for 1984.

Dr. de Bever testified that his forecast of the Canadian dollar was more conservative than Hydro's because

he took into account that other forecasters had in the past tended to be overly optimistic; that others had not fully taken into account the continuing higher rates of inflation in Canada than in the U.S.; and that he had a less optimistic view of trade performance.

Board Counsel argued that the impact of any decline in the value of the Canadian dollar could be mitigated by Hydro because Hydro has the ability to hedge such potential losses and he felt it would be reasonable to assume that $13 million of the potential loss could be offset by such hedging.

Mr. Genest submitted that Hydro's more optimistic view of the Canadian dollar was due to the fact that the value is controlled by the spread between interest rates in the U.S. and Canada, and that the Bank of Canada can support the dollar.

The Board is of the opinion that the Chase forecast is somewhat pessimistic, falling below the range of predictions reflected on Table 2. There may be some weakening in the value of the Canadian dollar but there appears to be no reason to assume such a substantial decline as forecast by Chase. On the other hand, Hydro's forecast appears to be somewhat high as the Board does not think it likely that the Bank of Canada would continue to support the Canadian dollar for a prolonged period should there be continuing downward pressure.

The Board does not accept Mr. Armstrong's argument that Hydro has the potential to hedge possible losses in the

event of a falling Canadian dollar. The Board is of the opinion that the application of hedging should be restricted to the managing of foreign exposure after the incurring of an obligation and not to what in effect would be massive foreign exchange speculation on the part of Hydro.

The Board therefore concludes that in 1983 the value of the Canadian dollar will be 80.5¢ and for 1984 the value will be 80¢ and therefore recommends that Hydro's revenue requirement be increased by $21 million.

PEAK AND ENERGY DEMAND

Introduction

During the last six months of 1982 and continuing into early 1983, Hydro's system demand declined substantially from the level attained in 1981. Mr. Higgins, Hydro's load forecaster, testified that this drop would be matched by a corresponding decrease in the 1984 load because the recession has delayed expansion of new capital equipment in the private sector.

Hydro forecast its 1983 average monthly peak demand to be 15,564 megawatts ("MW"), down from the average monthly peak of 16,172 MW for 1983 forecast a year ago. Hydro also forecast 1983 energy demand would drop dramatically.

Hydro forecast the average monthly peak demand for 1984 to be 16,108 MW, the December peak to be 18,361 MW, and energy requirements to be 108,728 gigawatt hours ("GW.h"). These values are all higher than those presently forecast for 1983 but are lower than the amounts forecasted for 1984 in 1981 and 1982.

Hydro appears to have effectively lost at least two years of normal demand growth and may continue to suffer attrition in its former load forecast for some years to come.

Effect of Marketing Program and Time-of-Use Rates

Mr. Higgins testified that the intended switch in load from daytime to nighttime hours resulting from time-of-use ("TOU") rates would have an uncertain but insignificant effect on the 1984 load.

AMPCO disagreed and argued that the Board should recommend an increase in Hydro's load forecast of 2.0 percent because of an expected increase in the load from the operation of the marketing program. In reply argument, Hydro's Counsel rejected AMPCO's contention stating that there was no evidence that any effect imposed by the marketing scheme would exceed the forecast error of Hydro's load forecast.

The Board does not see any reason to reject an alternative forecast simply because it does not differ from Hydro's forecast by more than Hydro's forecast error but accepts that there is no evidence to support AMPCO's recommended increase. The Board therefore recommends no alteration to the load forecast due specifically to the marketing program or TOU rates.

Unallocated Load

The forecasted unallocated load for 1984 of negative 809 MW was adjusted downward by a further 499 MW for purposes of this hearing which resulted in, Mr. Armstrong said, a load forecast containing:

> ". . . a larger measure of judgment than any such forecast in recent history . . . the equivalent of four years load growth on the Hydro system."

The large size of this unallocated load adjustment caused Mr. Armstrong to caution the Board that the forecast may not represent a reasonable basis for the setting of rates in the short-term.

Mr. Genest pointed out that although ideally there should be no unallocated load, reality requires it and in fact it has served to reduce the forecast error substantially in 1982 and in previous years.

The Board considers that, while a basic mechanical forecast is necessary, personal judgment must still form a very large part of the final product. Board Counsel's comment on the size of the unallocated load appears to be more a criticism of the age of the data making up the forecast and therefore the magnitude of the judgment necessary, rather than of the use of judgment itself.

The Board cannot accept Hydro's estimate of the amount of unallocated load because of the Board's recommendations in regard to the economic growth which are outlined later in this section.

Scheduling of Forecast Preparation

Board Counsel commented in argument that Hydro's intention to alter the schedule for the preparation of load forecasts for future hearings would result in the forecast being some six months older than has been the tradition in these hearings.

Mr. Genest argued that an offsetting benefit would be that the amount of the unallocated load would be much smaller, in part due to the fact that budget and planning forecasts would depend upon the same winter peak. Mr. Higgins testified that the new proposal would produce a better quality forecast with the result that less judgment (or unallocated load) need be used.

While the Board questions the merit of rescheduling in view of the lengthened lead time and the several years needed to determine if the change will actually achieve more accurate load forecasts, it recommends trial acceptance of Hydro's proposal.

Link Between the Economic and the Load Forecast

Board Counsel argued that the connection between the economic forecast and the load forecast was "obscure at best" and that the economic forecast "should form the fundamental building block for the forecast of future load and that the link between the two should be unmistakable and . . . clear". He urged the Board to recommend that Hydro, in the next rate hearing, "clearly define the economic assumptions that form the basis for its load forecast".

Counsel for OMEA, supported by Board counsel, called for Hydro to provide a consistent set of elasticity estimates relating changes in economic conditions to the load forecast, including as a minimum the effects of changes in GPP and GNP, the real price of electricity and any technological effects that could be determined.

Mr. Genest argued that the link, "while admittedly not simple . . . is clear from the evidence". He pointed out that the economic assumptions were not mechanically applied through the use of a model but that informed judgment is applied to the results. In response to Mr. Armstrong's recommendation that Hydro list the economic assumptions underlying the load forecast, Mr. Genest pointed out that the procedure was already being done, but that in any case, the forecast of expected load cannot be explained entirely by the economic assumptions upon which it is based. The load forecast is developed not only from the economic forecast but also from a survey of Hydro's direct industrial and municipal customers and finally from the application of judgment in the form of unallocated load.

The Board agrees with Mr. Genest that further defining the link between the two forecasts as suggested by Mr. Schwartz and Mr. Armstrong will only serve to examine one of the building blocks making up the load forecast and therefore is only of limited use, particularly in view of the time constraints imposed on a rate hearing. While a better understanding of the correlation (elasticities) between economic growth and load growth would be helpful and desirable, the Board recognizes the difficulty in demonstrating the link in any greater particularity than already provided by Hydro. The Board also notes that growing reliance on end-use models in load forecasting may tend to weaken the link between the economic and load forecasts.

The Board considers it would be futile to recommend that Hydro strive to develop a rigorous relationship between its economic and load forecasts but does recommend that the economic assumptions underlying the load forecast, especially as to growth rates, be explicitly stated.

Economic Growth and the Load Forecast

Hydro's evidence was that its submission was based upon the "1983 planning Load Forecast" approved in November 1982 and adjusted in February, 1982. Mr. Higgins, Hydro's load forecaster, said that at the time of preparing the submission he had available a draft economic outlook dated August 25, 1982 which forecast the growth in the 1984 GPP to be 2.0 percent. In the preceding section of this report, the Board has recommended a 1.5 percentage point increase in Hydro's 1983 forecast and a 1.0 percentage point increase in Hydro's 1984 growth forecast for Ontario GPP.

Mr. Davies argued that Hydro included within its load forecast a level of GPP growth which was "unduly pessimistic" and that the load forecast should therefore be increased by 1.6 to 2.2 percentage points. Board Counsel submitted that the combined 1983 and 1984 GPP should be increased 2.6 percentage points and that, depending on the base level of the GPP used by Mr. Higgins in determining the load forecast, the effect on the revenue requirement is a reduction of either $20.2 million or $54 million.
Mr. Schwartz recommended a much smaller increase in the GPP

and consequently a reduction of only $4.8 million in the revenue requirement. Mr. Poch considered that the load forecast should be reduced because Hydro had consistently overstated such projections.

Mr. Genest contended that a 2.6 percentage point increase in GPP would lower the revenue requirement as determined by Hydro by $20.2 million and not $54 million. However, he took exception to any alteration of Mr. Higgins' load forecast as a result of a GPP increase as Hydro did not accept Dr. de Bever's optimistic forecast. Nevertheless, as noted earlier, Mr. Genest conceded in argument that Hydro's forecast of GNP should be increased for 1983 but not 1984.

Mr. Genest argued that any increase in the GNP and GPP found by the Board cannot be mechanically applied to the load forecast and thus to the revenue requirement. Although Mr. Genest did not say so, it is apparent that the survey of customers' loads and the application of the unallocated demand, also play a prominent factor in the final determination of the load forecast and thus account in part for the varying mathematical relationships between a change in the GPP and GNP and the load.

The Board has determined earlier that the GNP and GPP forecast for 1984 should be increased and it is now left to estimate the ultimate effect such increase will have on the revenue requirement. It is the Board's opinion that given the inconsistent relationship between economic growth and the revenue requirement and the uncertain basis of the load

forecast, Board Counsel's recommendation of a $54 million revenue requirement decrease because of the GPP increase is not appropriate. The Board considers that even Hydro's calculation of $20.2 million is excessive. On the other hand, Mr. Schwartz's recommendation of a decrease of $4.8 million appears too low.

Since Mr. Higgins gave his evidence the economic indicators on which he based his load forecast have been steadily improving and it appears that, by the time Hydro's Board of Directors actually sets the final rates, the indicators for 1984 will be even more favourable.

The Board therefore recommends a decrease of $15 million in the revenue requirement to take into account its conclusions that the 1984 load will be higher than Hydro presently forecasts.

FUEL AND FUEL RELATED COSTS

Introduction

Included in this section (formerly known as energy variable) are costs which vary in relation to the amount of energy produced, including fuel costs and certain other charges and credits that are fuel related. Table 3 on the following page is a summary of these costs and includes adjustments made by Hydro during the hearing.

The figures indicate that, as in H.R. 11, the largest cost is fossil fuel, of which the major component is coal. However, fossil fuel costs have decreased $60 million from 1983 amounts in spite of the fact that during the hearing, Hydro decreased its forecast of power purchases by $28 million and increased coal consumption costs by $38 million.

Coal Supply Contracts

In H.R. 11 the Board recommended:

> ". . . that Hydro produce for the Board at the next hearing such information on coal-supply contracts as is customarily supplied by utilities appearing before their regulatory agencies."

In response to this recommendation, Hydro filed summaries of its coal supply contracts and related contractual matters such as storage and transportation. No Counsel raised any objections to the material filed and the Board considers that it satisfies the Board's concerns in last year's hearing.

TABLE 3
FUEL AND FUEL RELATED COSTS
1984
($ MILLIONS)

	Updated Submission by Hydro
FOSSIL	790
NUCLEAR	
Nuclear Fuel	184
Past Irradiated Fuel Management	2
NPD (Steam)	9
Cobalt Revenue	(9)
WATER RENTALS	30
INTERNAL TRANSFERS	
Internal Sales	(30)
Bruce Steam Transfer Credit	(32)
Commissioning Energy	72
POWER PURCHASED	166
NUCLEAR AGREEMENT PAYBACK	83
TOTAL	1,265

Nuclear Power Demonstration Plant ("NPD")

NPD is a small nuclear reactor in the town of Deep River that has been in operation since 1958. The nuclear reactor is owned by Atomic Energy of Canada Limited ("AECL") with the generating plant owned by Hydro. Hydro purchases the steam from AECL for electricity generation.

Rolphton Nuclear Training Centre ("NTC") is located on the same site and the evidence was that it has been used for training Hydro's nuclear staff since 1962.

Last year the Board expressed a concern about the high cost of steam supplied from NPD and recommended:

> ". . . that Hydro be prepared to show cause at next year's hearing as to why the Board should not recommend termination of the NPD agreement and the moving of the training and testing to some other nuclear facility".

Hydro in this hearing filed an exhibit containing a review of the continued operation of NPD and in addition, a joint submission was filed in support of its continuation by the Town of Deep River, the Townships of Rolph, Buchanan, Wylie, McKay, Head, Clara and Maria and the Village of Chalk River.

Mr. Conway as well as Mr. Howey, Mr. Warner, Mrs. Ridley and Mr. Smith spoke on behalf of the communities. Mr. Howey, as a former employee of Hydro, had been involved in the development of the nuclear training program at Rolphton for a considerable period prior to his retirement from Hydro. The representatives testified to the

benefits of both NPD and NTC to the area and the impact upon the communities should they be closed down. The witnesses pointed out that there would be the loss of approximately 500 jobs from NPD/NTC; the loss of a $12 million payroll and a severe economic loss to local business estimated at 20 to 30 percent of their revenues with a further loss of about 25 percent of the communities' payroll.

Board Counsel said that the evidence of Hydro as well as that of the representatives of the communities went:

> ". . . a long way in my submission towards supporting the continued involvement of Hydro at the Rolphton site".

He was concerned about the impact on the communities and suggested that Hydro should enter into discussions with AECL to ensure that the cost of power is not excessive and that Hydro should try to find ways to make better use of the facilities.

OMEA altered its position somewhat from H.R. 11 where it recommended that "immediate steps be taken to cancel the agreement with AECL" but did recommend that it be closed and fully decommissioned by 1988. Mr. Schwartz argued that this would allow enough time for the communities to prepare for the shutdown and in addition, valuable information would be obtained from the decommissioning process.

Mr. Schwartz contended that NPD was not needed because of its very small size compared to present nuclear facilities and that the nuclear industry had advanced so that NPD was of little advantage in detecting new operating

problems. As well, Unit 1 at Pickering was now mature and that this gave even less reason for keeping NPD for testing and technical development. As the station is not large enough to train all of Hydro's nuclear operators and does not provide better or complete training conditions, it was not needed, he said.

None of the other intervenors dealt with this issue.

Mr. Genest contended that Hydro's evidence justified the continued operation of NPD and Hydro was now negotiating with AECL on a number of complex issues, among them, the price Hydro pays AECL for the steam.

The Board is of the opinion that when considering NPD it would be unreasonable not to consider NTC as well. As Mr. Conway submitted:

> ". . . there is a complementary relationship which exists today, which existed for almost 20 years . . . between the Nuclear Power Demonstration and the Nuclear Training Centre".

Although it may not be the Board's responsibility to measure the social and economic impacts on Deep River and surrounding communities, the evidence shows that the area would be dealt a very substantial blow if NPD and NTC closed down.

Hydro reiterated its previous position that NPD was not intended to produce electricity economically but to make a cost effective contribution to technical developments; to train nuclear personnel; to provide an early warning system; and, to complement the role of NTC. The merits of its continued operation are to be reviewed annually.

The Board is satisfied from the evidence that the operation of NPD should be continued and is hopeful that the negotiations with AECL on the cost of steam from NPD and OM&A cost sharing will prove fruitful. The Board recommends that it be kept informed at the next hearing of the progress of the negotiations.

Irradiated Nuclear Fuel Management

The Board, in H.R. 11, recommended that for 1983 the provision for past irradiated fuel management ("IFM") costs be spread over the period from now to the estimated in-service date of the disposal facility. Hydro accepted this recommendation commencing with the 1983 year. Hydro also considered it reasonable to establish IFM costs based upon an estimated in-service date of the disposal facility of 2010 rather than the year 2000 which was used in last year's hearing.

Hydro's Depreciation Review Committee also recommended a reduction for costing purposes in the average estimated distance from the reactor to the disposal site from 1,600 to 1,000 kilometres being the mid point of the range between 400 kilometres and 1,600 kilometres which represents the minimum and maximum distance from any nuclear generating station to the final disposal site.

As a result, the past IFM charges for 1984 are $2 million, a very substantial reduction from the 1983 charges of $15 million as proposed by Hydro in H.R. 11.

Energy Probe took exception to the reduction in the transportation distance and submitted that further study was needed. Board Counsel accepted Hydro's policy as did ONGA, and the rest of the intervenors did not comment upon the issue.

Hydro's evidence indicated that there are potentially usable sites in the Canadian Shield within the suggested range and the Board therefore recommends acceptance of Hydro's estimate of 1000 kilometres as the distance from the nuclear generating station to the disposal facilities, for the purpose of establishing the IFM costs to be included within the 1984 rates.

Coal Delivery Downsizing

The OMEA argued that Hydro should decrease its coal purchases in 1984 by the same amount that it had lowered its purchases in 1983.

Energy Probe recommended a large coal inventory sufficient to cover an extended outage of nuclear facilities. The Board notes however, that over 2000 MW of additional power could be purchased if required and in view of the growing excess capacity, it considers an increased coal inventory unwarranted.

The evidence shows Hydro negotiated a 20 percent reduction in its coal contracts for 1983 and that it expects to negotiate a similar 20 percent reduction for 1984 and

1985. Although the percentage will be similar to that of 1983 Hydro pointed out that it will be calculated on a reducing base quantity of coal.

The Board therefore recommends acceptance of the level of coal downsizing proposed by Hydro and adjustments of the revenue requirement, upward by $38 million in this regard and downward by $28 million to reflect the resultant reduction in power purchased as forecast by Hydro.

Nuclear Fuel Inventory

The Board in H.R. 11 made no adjustment to the 10 months supply of nuclear fuel inventory maintained by Hydro but mentioned that Hydro planned an extensive review of the "supply side factors" and recommended that it be completed in time for this hearing.

Hydro filed a report entitled "Nuclear Fuel Supplies, Security and Target Inventory Levels" (April, 1983) which documented the results of a review of the security of the fuel supply chain and concluded that a 10 month target level for finished fuel inventory was not unreasonable.

Board Counsel stated that, although Hydro's witnesses indicated that it would not be possible to achieve a lower level of inventory in 1984, their evidence was of no real assistance in determining what an appropriate level would be in future years and he submitted that an eight month inventory level could also be appropriate.

The evidence was that a level lower than 10 months' supply could not be achieved for next year, and the Board therefore recommends acceptance of the 10 month supply level for 1984 only.

Internal Transfers

In H.R. 11 the Board felt that present customers were subsidizing the production of heavy water and the construction of generating stations by Hydro "selling" electricity to these capital functions at lower than the normal rate charged to a municipal utility. In that hearing, the Board recommended that Hydro address this question in its pre-filed material for this hearing and as a result, Hydro filed a review entitled "Pricing of Power Used Internally by Ontario Hydro", which concluded that Hydro's present pricing and accounting policy was still appropriate.

Hydro's witnesses contended that, by eliminating the net income element from the price charged for internal transfers, the policy conforms to the general accounting principle that there should be no profit realized by completing an internal transaction.

Board Counsel found that the pricing and accounting policies were acceptable and none of the intervenors dealt with the issue.

The Board concludes that the question of the rate to be charged for electricity used internally requires a great deal of judgment but it is satisfied that the issue has been

well canvassed and therefore recommends acceptance of Hydro's present policy for the purposes of this proceeding. The Board notes, however, that almost all internal sales of electricity are to the heavy water plants and that the accounting treatment is inconsistent with that used for steam. It recommends therefore that such inconsistency be further reviewed in next year's hearing.

The Costing of Steam Used in the Production of Heavy Water

The Board in H.R. 11 expressed concern about the accounting procedure for costing steam supplied by nuclear reactors at Bruce A to the heavy water plants (Bruce steam transfer credit). It recommended a review of this credit as well as all accounting aspects of heavy water.

The Bruce steam transfer credit is forecast for 1984 to be $32 million.

In this proceeding, Hydro filed a review of its policy which covers all accounting aspects of heavy water and contains a short discussion of steam costing alternatives. The review concludes that no change should be made to the present policy. The review states:

> "To sum up, the steam costing policy takes a system approach rather than a site-specific approach and applies a number of costing bases reflecting the different cost cause and effect relationships associated with varying steam supply conditions. It automatically takes into account changes in these conditions such as the increase in the availability of non-curtailing steam that will occur when Bruce NGS 'A' reactors are

> re-licensed to operate at higher levels. The policy contributes to the equitable allocation of costs to generations of electricity customers by identifying and capitalizing as a cost of heavy water all costs caused by the existence of the heavy water operation. The costs are allocated to the customers of each period in proportion to the benefits they receive as the heavy water is used."

Board Counsel found the pricing policy acceptable and none of the intervenors dealt with this matter.

The Board recommends that the proposed amount of the Bruce steam transfer credit for 1984 be accepted for the purposes of this proceeding but that approval of Hydro's policy for costing steam be withheld pending isolation of the Board's concerns with depreciation of heavy water and inconsistency in the costing of electricity and steam.

Secondary Sales

Ontario Hydro, in its submission, forecast its secondary sales for 1984 to be 11,115 GW.h producing gross revenues of $432 million. Hydro's evidence was that the high cost of electricity generated from oil in the U.S. and Hydro's lower cost coal-generated electricity continue to provide "a strong incentive to economy transactions".

During the hearing Hydro revised its 1984 price for secondary sales downwards from its original forecast of $38.9 per megawatt.hour ("MW.h") to $36 per MW.h, but did not change the energy sales forecast. The evidence was that although 1983 energy sales were close to forecast, the price was coming down. Hydro contended that this was a result of a substantial reduction in the price of oil in the U.S. and

surplus generating capacity in the northeastern states due to a reduction in load growth and that these trends would continue in 1984. In addition, earlier this year Hydro was informed that the General Public Utilities ("GPU") contract for firm sales in 1984 would not be forthcoming.

During the hearing and in argument, Energy Probe raised the issue of social costs contending that they were not recovered in secondary nuclear sales while coal-fired exports did include charges of this nature. Hydro's Counsel stated that the matter of social costs has been considered and determined by the National Energy Board.

Mr. Armstrong argued that the in-service dates of the two units expected to be on stream in the State of Michigan during 1984 may be further delayed; that more nuclear energy will be available for export in 1984 at an attractive price; that the economic recovery will be stronger than Hydro forecasts in the northeastern U.S.; and, that Hydro's more efficient coal-fired plants should provide more attractive sale prices. He contended that based upon the evidence, secondary sales should be increased by 1,000 GW.h to 12,115 GW.h, and that the original price forecast by Hydro of $38.9 per MW.h rather than its revised price of $36 per MW.h should be accepted by the Board.

OMEA stated that Hydro should receive $39 per MW.h because the evidence showed that economic growth and rising prices should have a favourable impact on Hydro's secondary sales, but OMEA did not propose an adjustment to the volume of such sales.

Mr. Genest argued that Hydro's forecast should be accepted because as off-peak nuclear energy sales increase, the average price of secondary sales will decrease; the GPU contract with a 1984 price of some $52.9 per MW.h has been lost, and Hydro's sales are related to the economy of the northeastern states, not the U.S. economy as a whole.

The Board is of the opinion that the economic recovery in the U.S. is more pronounced than in Canada. Automobile manufacturing in Michigan and the northeastern states has obviously impacted directly on the economy of Hydro's secondary sales customers and in addition, the economy generally has improved even further since the time of Hydro's rate submission.

The Board concludes that this should lead to an increase in secondary sales, but notes that the loss of the sale to GPU will have a negative sales impact.

The Board notes from the evidence that secondary sales were 11,051 GW.h in 1981, 10,753 GW.h in 1982, with 10,958 GW.h expected in 1983. The average price obtained or expected for these years was $38.3 per MW.h in 1981, $39.0 per MW.h in 1982 and $40.8 per MW.h in 1983 (the 1983 figure was updated during this years hearing to $36.0 per MW.h).

The Board agrees with Hydro that it is unlikely that oil prices will be lower in 1984, and while Michigan's new generating units may or may not be on stream in 1984, Hydro has surplus capacity to sell, and it seems obvious that it will be aggressively seeking new markets or seeking to increase energy sales to existing markets.

Consideration must also be given to the fact that 1981 and 1982 were periods of persistent and prolonged recession both here and in the U.S., and that Hydro's forecast was made prior to the very strong economic recovery that has occurred subsequently this year. The Board is therefore of the opinion that Hydro's 1984 estimate of sales volumes and the price for these sales seems rather pessimistic.

Nuclear generation is forecast to supply 2.0 percent of secondary sales in 1983 and 9.0 percent in 1984 which will, according to the international pricing formula, decrease slightly the total revenues Hydro is to receive from its 1984 secondary sales.

The Board, taking into consideration all of these factors including the loss of the GPU load, has concluded that Hydro's secondary sales will be 11,500 GW.h in 1984 and that the average price will be $38.0 per MW.h.

The Board therefore recommends that the 1984 gross revenue for secondary sales be increased to $437 million. The result does not materially affect the revenue requirement.

Commissioning Energy

The 1984 revenue requirement includes $72 million for commissioning energy. Hydro's present policy is to charge commissioning energy to the cost of operations at the incremental cost of producing energy at the generating units displaced by the commissioning unit.

The Board in H.R. 11 accepted Hydro's policy for the costing of commissioning energy for 1983. However, it felt that Hydro should weigh the cost to present customers against the benefits to future customers and recommended that the policy "be re-examined by Hydro in time for presentation at its next hearing before this Board".

In response to that recommendation, Hydro submitted a position paper entitled, "Accounting for the Cost of Commissioning Energy", dated April 1983, and prepared by the Financial Policy Department, Comptroller's Division. The review concluded that the present method was appropriate and Board Counsel agreed.

OMEA contended that the costing methodology was inappropriate because it charges current customers more for energy than future customers will pay for energy from the same unit. Mr. Schwartz submitted a revised costing method which reduced the 1984 commissioning energy costs to $18.6 million.

AMPCO also found Hydro's accounting methods unfair to present customers. Mr. Davies argued that commissioning energy costs were not based on accounting costs but on the calculation of a "notional cost"; that Hydro had not considered the energy subsequently produced by units after a lengthy outage, which could be considered as equivalent to commissioning energy; that Hydro does not take into account other cost factors such as grid costs which result in higher system operating costs; and lastly, that commissioning

energy is not marketable. He expressed AMPCO's views that the basic test of fairness would be for commissioning energy to be sold on the open market. AMPCO opposed the present treatment by Hydro and asked that the entire commissioning energy cost of $72 million be deleted from the revenue requirement.

Hydro's Counsel disagreed with the claims of OMEA and AMPCO and argued that Hydro's policy was:

> ". . . to hold the current customer indifferent as to whether he obtains electricity from commissioning or in-service units".

Hydro's policy review considered three different methods of valuing commissioning energy and assessed them in terms of "fairness to customers". These were the incremental costs method, which is the one presently used by Hydro; the actual cost method, being related to the actual costs of the unit being commissioned, and the no cost method, where current customers would receive the benefit of the commissioning energy but not pay for it.

As the new nuclear units come into service Hydro's present costing method will lower the average cost charged for commissioning energy from $18 per MW.h in 1983 to $15.9 per MW.h in 1984 and to $7 per MW.h by 1986.

The Board notes that in H.R. 11 the cost of commissioning energy was shown as $22.1 per MW.h for 1983, compared to the 1984 cost of $15.9 per MW.h, representing a decrease in cost for commissioning energy of some $27.5 million.

The Board is of the opinion that Hydro's costing of commissioning energy represents the use of a great deal of judgment and that Hydro's exercise of that judgment seems reasonably fair and equitable. The Board therefore recommends acceptance of the present policy.

Pickering and Bruce Capability and Capacity Factors

Hydro, in order to predict energy production, uses three reliability indices, namely the Derating Adjusted Forced Outage Rate ("DAFOR"), the Planned Outage Factor ("POF") and the Maintenance Outage Factor ("MOF"). These indices are used to determine the capability and capacity factors contained in the rate submission.

Hydro predicts the various types of interruptions that are likely to occur at each station in order to arrive at its capability factor. This factor is a measure of how capable the plant will be in producing energy (in the case of Bruce A, steam and electrical energy).

At Pickering and Bruce B the capability factor and the electrical capacity factor are the same, but at Bruce A they are different due to the diversions of some steam to supply the heavy water plants. The electrical capacity factor is therefore considerably less for Bruce A than the capability factor.

The capability and electrical capacity factors averaged for the five years ending 1982 and those for 1982 to 1984 are contained in Table 4 on the following page.

TABLE 4
PERCENTAGE CAPABILITY FACTORS
AND ELECTRICAL CAPACITY FACTORS

	ACTUAL		FORECAST	
	1978 to 1982 Average	1982	1983	1984
Pickering capability and electrical capacity factors	86	87	85	82
Bruce A capability factor	83	87	88	86
Bruce A electrical capacity factor	73	74	79	75
Bruce B capability and electrical capacity factors	--	--	--	80

Net capability factor - the ratio of the quantity of energy (electrical and steam) capable of being produced at a station after allowance for outages and deratings, to the quantity of energy that would be produced if it were to operate continuously at its maximum continuous rating.

Net electrical capacity factor - the ratio of the quantity of electrical energy actually produced at a station, to the qunatity of electrical energy that would be produced if the station were to operate continuously at its maximum continuous rating.

Source: Exhibit 5.1, Table 5B3

Mr. Armstrong disagreed with Hydro's practice of rounding MOF values to no less than 1.0 percent and for Pickering A Units 1 to 4 he therefore reduced the value to 0.5 percent and for Unit 5 he reduced the value to 2.0 percent. He submitted that the mathematical result of making these and other changes yielded a capability factor of 84 percent as opposed to Hydro's 82 percent. Using Hydro's net sensitivity figures he recommended that the Board reduce Hydro's revenue requirement by $4 million.

As for Bruce Units 1, 3 and 4, Board Counsel claimed that the DAFOR values should be 6 instead of 7 as this reflected recent history. The MOF values he changed from 1.0 percent to 0.5 percent as he had done for Pickering. He argued that the difference between the capability factor and the capacity factor for Bruce A should be 10 percent rather than Hydro's 11 percent, being the five-year average shown in Hydro's rate submission. He submitted that the capacity factor should therefore be 87.58 percent and the net electrical capacity factor should therefore be 77.58 percent, rounded to 77 percent. Using the net income sensitivity figures he recommended that the Board reduce Hydro's revenue requirement by a further $10 million. The total reduction therefore as suggested by Board Counsel for Pickering and Bruce capacity factors was $14 million.

He contended that Hydro tended to underestimate the amount of nuclear generation and to overestimate the amount of coal fired generation in any given year and he referred to the Board's remarks in this respect in H.R. 11.

OMEA also took objection to Hydro's 82 percent capacity factor forecast for Pickering, stating that the five year average for 1978 to 1982 was 86 percent. Mr. Schwartz stated that the first unit at Pickering had a capacity factor of 65 percent while later experience indicated 91 percent for the first year of Unit 4. In their first years of operation the Bruce units averaged 80 percent. He submitted therefore that the forecast for the new Pickering Units 5 and 6 was:

> ". . . unduly conservative and would offset any decreased production due to pressure tube leaks in Unit 1."

He submitted that 86 percent was "comparable to recent experience" which would reduce Hydro's revenue requirement by $8 million using the sensitivity table provided by Hydro.

In regard to Hydro's claim for reduced production at Bruce, OMEA contended that the 16 day outage for Bruce Unit 2 is "unwarranted" and that Hydro's claim that more planned outages are required for Bruce with a corresponding reduction in production is not borne out by the evidence. Mr. Schwartz therefore recommended raising the capacity factor for Bruce from 75 percent to 79 percent which would result in a $20 million reduction in the revenue requirement and make a total reduction of $28 million for increased capacity factors at Bruce and Pickering.

As to Board Counsel's argument about the MOF values for Pickering, Hydro's Counsel contended that the evidence indicated that the uncertainties were too great to justify a precision of less than 1.0 percent. Mr Genest contended that the DAFOR value for Pickering Unit 1 takes into account the work on the fuel channels and the possibilities of overrunning the planned outage and having further difficulties with the fueling machines subsequent to the extensive work that is to be done.

As to Bruce Units 1, 3 and 4, Hydro's Counsel pointed out that the five year MOF average is 2.2 percent and the three year average is 1.4 percent. Because of incipient

pressure tube problems in Unit 1 it would be unrealistic to expect a DAFOR as low as 6 percent.

Hydro's Counsel claimed that Mr. Armstrong's use of a five-year average for the spread between the capability and capacity factors was a "gross oversimplification". The methodology used for Bruce he said is quite complex and the:

> ". . . computer model . . . takes into account not only the underlying capability factor but such other parameters such as steam demand and timing, transmission capability and outage rates, heavy water plant outage rates and the impact of commissioning new units".

As to the claims of OMEA, Hydro's Counsel submitted that it is not possible to extrapolate the experience of one plant to another. In Bruce there are fewer boilers and less to go wrong he argued, whereas in Pickering there are twice as many boilers with a need for more heat transport equipment and more pumps. Mr Genest argued that the 16-day outage allowed for Bruce Unit 2 for expected trouble with pressure tubes is a "modest length of time compared to the 100 days that it was forced out in 1982 for repair of pressure tube leaks".

As to the claim of both Board Counsel and Mr. Schwartz that Hydro has a tendency to underestimate nuclear production, Hydro's Counsel pointed out that in the case of the Pickering forecast for 1979 to 1982, two of the four years were high and that the evidence showed that 1983 will also be high. For Bruce, he submitted that Hydro's witnesses testified that although Hydro had "kept raising its sights, the plant improved more quickly than anticipated", so that

there were differences between forecasts and actuals. He claimed that Hydro was now predicting that it would only be slightly under forecast for 1983.

In conclusion Hydro's Counsel said that:

> ". . . the Board should accept the Ontario Hydro forecast of nuclear production from these two plants since they are firmly rooted in historical data and informed interpretation of that data"

Ontario Hydro's average capacity factors for Pickering and the average capability factors for Bruce A for the years 1979 to 1983 are shown on Table 5.

TABLE 5

PICKERING AVERAGE CAPACITY FACTORS 1979-1983

Forecast Year	Forecast %	Actual %
1979	86	84
1980	85	83
1981	84	88
1982	83	87
1983	85	83*
1984	82	N/A

BRUCE A AVERAGE CAPABILITY FACTORS 1979-83

1979	71	77.5
1980	74	87.5
1981	77	91
1982	81	87
1983	88	87*
1984	86	N/A

NOTE: the forecasts for Pickering and Bruce "A" are taken from the evidence in H.R. 12

* Forecast after three-month actual.

The Board notes that from the updated evidence given during the hearing, Hydro is now forecasting 83 percent as the average capacity factor for Pickering for 1983, which is

two percentage points lower than Hydro's forecast in the rate submission. This will result in Hydro being lower than originally forecast in three of the five years from 1979 to 1983. As for Bruce, the evidence indicated a revised 1983 forecast capability factor of 87 percent as opposed to the 88 percent in the rate submission. This would be the only year that the forecasted "actual" would be lower than the forecast in the five-year period.

The Board is of the opinion that the 1984 forecast electrical capacity factor of 75 percent for Bruce A is understated and should be adjusted upwards 1.0 percentage point. Hydro's sensitivity analysis indicates that this would reduce the revenue requirement by $5 million.

Locked-in Energy

Board Counsel commented on the continuing problem of locked-in energy at Bruce caused by the lack of adequate transmission capacity. Mr. Armstrong pointed out that locked-in energy is forecast to increase from 168 GW.h in 1983 to 889 GW.h in 1984 and except for 1985, Hydro's evidence was that subsequent years will show varying but marked increases, with the 1987 forecast being 4,551 GW.h., valued at $75 million.

The evidence was that the 889 GW.h of locked-in energy at Bruce in 1984 is worth $14.9 million however, because of the commissioning energy policy adopted by Hydro, 1984 customers will pay only $0.9 million while future

customers will pay the balance as it will be capitalized in the cost of those units being commissioned in 1984.

The Board would again comment that this energy loss is of serious concern. The continuing inability to move this lower cost power to the market, as the Board stated in the last hearing, "results in a direct and calculable loss to Hydro". The Board is hopeful that this very serious problem will soon be remedied and recommends that Hydro at the next hearing present an up-to-date review of its progress in obtaining permission for its transmission lines.

Nuclear Payback

The nuclear payback results from an agreement between Hydro, AECL and the Province of Ontario which shared the capital cost of constructing Pickering Units 1 and 2. It represents in a broad sense, the net operational advantage of having electricity generated by Pickering Units 1 and 2 rather than by the coal-fired Lambton Units 1 and 2. The net 1984 cost to Hydro is $83 million.

Included in this amount is $4 million of payback costs that Hydro previously assumed to be allowable under the nuclear payback agreement, but which are now apparently disallowed by AECL. These costs relate to decommissioning and fuel channel associated costs which AECL asserted should not be passed along until such time as they are incurred.

Board Counsel argued that the appropriate treatment therefore for these costs would be to treat them as a deferred receivable thus removing $4 million from the revenue requirement in 1984.

The Board is of the view that it should not place itself in the position of judging the terms of an agreement which is not directly in issue nor should it prejudice the ongoing negotiations between Hydro and AECL. It seems to the Board however that Hydro should be making every effort to come to satisfactory terms with AECL, as the costs under this agreement continue to increase. Hydro in order to serve its present and future customers in a responsible manner must continue its pressure on AECL in regard to this point.

For the purpose of the 1984 rate submission the Board recommends the nuclear agreement payback cost be treated as Hydro proposes but it also recommends that Mr. Armstrong's submission concerning the disallowed costs be examined further at next year's hearing.

Cobalt Revenue

Cobalt revenue results from the sale of Cobalt-60 to AECL which processes and markets the product primarily for industrial sterilization of medical disposables. Cobalt revenue for 1984 is forecast to be $9 million and is considered a credit to nuclear fuel costs.

The evidence was that the price for Cobalt-60 produced at new installations in Pickering and Bruce was being negotiated and Mr. Bennett on behalf of Hydro testified that:

> ". . . we are attempting, for the benefit of our customers to strike a price which certainly returns the cost and provide, some benefit to our customer while, at the same time, pricing it at such a point that AECL will accept it and will develop a market."

The Board is of the opinion that Hydro should bear in mind that, notwithstanding cobalt sales are now a reasonably small program, it is apparent that world markets are expanding and in the Board's opinion, a normal private sector rate of return should result from the sales to AECL now and in the future.

The Board recommends that Hydro submit a report at the next hearing on the status of its cobalt negotiations keeping in mind the Board's recommendations in regard to Hydro's new management focus outlined in the marketing section of this report.

In-service Dates for Pickering Unit 6 and Bruce Unit 6

The evidence was that Pickering Unit 6 would be in-service in October 1984 and Bruce Unit 6 in April 1984, and Hydro stated that these were considered to be the most probable dates taking into account staffing problems and technical difficulties.

Mr. Russell stated that:

> ". . . last year we didn't make a distinction between target and most probable. We had one date which we felt was both a target and most probable. This year we are recognizing that the most probable is a little later than the target date."

Board Counsel submitted that the evidence given by Hydro's witnesses "made it difficult to have a great deal of confidence in the in-service dates." He submitted that Pickering Unit 6 has the same potential for technical and staffing problems that have occurred at Pickering Unit 5, and as well Bruce Unit 6 has staffing problems. He recommended a $21 million reduction in the revenue requirement for possible delayed in-service dates, which "represents a notional delay of one month on each of the units."

The Board is of the opinion that the evidence does not support Hydro's present in-service dates for Pickering Unit 6 and Bruce Unit 6. Three of the five in-service dates shown in H.R. 11 (Pickering Unit 6, Pickering Unit 7 and Bruce Unit 5) have already been delayed by six months. The only in-service date not changed was that for Bruce Unit 6.

In addition, the evidence shows that there have been significant difficulties in meeting the requirements of the Atomic Energy Control Board for the licensing of shift supervisors and nuclear operators and this is an on-going problem. Mr. Popple when speaking of Bruce Unit 6 said:

> "In fact, at this moment in time, there is severe concern in the organization that we will have the required number of operators and shift supervisors available for the first units at Bruce B."

The Board, in considering the circumstances as they now exist, sees little reason to assume that there will be speedy resolution of the problems. It seems probable that the in-service dates will not be met, and the Board therefore recommends a half-month delay in the in-service dates for both Pickering Unit 6 and Bruce Unit 6 and that the revenue requirement be reduced accordingly by $11 million.

Hydraulic Production

Hydro forecast its 1984 hydraulic production at 35,165 GW.h, a very slight increase over what was forecast for 1983.

OMEA contended that the rate submission was based upon median hydraulic conditions except in the Great Lakes where the forecast remains somewhat above normal and the Niagara River which has been at a high stage for some ten years. Mr. Schwartz stated that the forecast of hydraulic production should be adjusted upwards by two percentage points to 35,870 GW.h, being the mid-point between the 1980 hydraulic production of 36,689 GW.h regarded by Hydro as a reasonably typical year and the 1984 forecast. He also noted that Hydro's average production for the last five years was 36,193 GW.h. OMEA therefore recommended a decrease in the revenue requirement of $12 million to account for this apparent underestimation of hydraulic production.

Hydro submitted that it used the median and not the mean to forecast hydraulic production as did Hydro Quebec and Manitoba Hydro. Mr. Genest produced a record of riverflows at two locations and concluded that the mean overstated the usable hydraulic flow and that the median produced a result with an equal probability of understating or overstating.

Hydro's Counsel argued that 1980 was not a typical year in hydraulic production and 1979 was an all time high.

The Board notes from the evidence that during the 1978-1982 period the yearly estimates in the rate submissions have exceeded the actual figure in three out of the last five years. The variances for the individual years have been greater than the variance of the total which exceeded the actual by 304 GW.h or 0.17 percent. In addition, Hydro stated that because of the present high stage of the Niagara River, judgment is used in predicting when the flow will return to the median and the main source of error appears to be in forecasting riverflows. Based on the last five years Hydro's judgment seems reasonable and the Board therefore recommends acceptance of Hydro's 1984 forecast for hydraulic production. The Board however, in view of the large proportion of hydraulic production that is base load as opposed to peaking, is not fully satisfied that the use of the median in lieu of the mean has been justified and recommends that Hydro provide more detailed support for its position in this matter in next year's hearing.

OPERATION, MAINTENANCE AND ADMINISTRATION COSTS

Introduction

Hydro forecast its operation, maintenance and administration ("OM&A") costs in 1984 to be $1,012.3 million as shown on Table 6 on the following page. Cost changes from the 1983 total resulted from a new marketing program, the commissioning of new nuclear units, unforeseen corrective maintenance, changes in certain accounting policies, staff reductions, inflation and decreased computer acquisition costs.

During the hearing, Hydro introduced a document entitled "Hydro's Corporate Strategy for the 1980's" which is essentially a general policy document outlining a plan for developing a more cost effective corporation with emphasis on the better use of the facilities already in place. The strategy includes new marketing initiatives to develop a growth rate of between 2.0 and 4.0 percent per year for the next decade, with no growth on average in the real price of electricity and with maintenance of Hydro's financial integrity. As well, Hydro intends to foster the construction of energy-efficient homes and appliances, the development of plans and programs for the substitution of fossil fuels by electricity and the retrofitting of public buildings. Export sales are expected to increase capacity usage until Ontario's domestic demand increases substantially and sales of related products like cobalt, steam and tritium are expected to "provide the seeds of Ontario Hydro's future."

TABLE 6

OM&A PROGRAM COSTS

$Millions

	1983	1984
Operations		
Design & Construction	43.4	47.5
Production & Transmission	547.4	581.4
Distribution & Marketing	180.6	201.2
Supply and Services	60.0	57.3
	831.4	887.4
Planning and Administration		
Corporate Relations	10.8	11.7
Power System Program	43.7	47.5
Finance	30.3	32.9
Human Resources	32.6	33.9
Administrative Standards	1.0	0.9
	118.4	126.9
Executive, Secretariat, Law & Audit	14.5	15.6
Program Cost Adjustments		
Cost reduction target for the Operations group	(16.7)	(18.5)
Space reconciliation	(3.2)	(4.0)
Major corrective maintenance activities	14.2	20.6
Surplus staff	5.7	-
Demand management	4.7	10.3
Capitalization of early project development costs	-	(6.4)
Adjustment from fiscal year to calendar year	-	(15.0)
	4.7	(13.0)
February 1983 Economic Outlook update and escalation adjustments	-	(4.6)
OM&A program costs	969.0	1012.3

The following sections deal with the specifics of the OM&A expense proposed by Hydro for the 1984 rate year.

Restraint Programs

During the hearing Hydro reduced its revenue requirement by $5 million to reflect the lower OM&A costs associated with the mothballing of Keith and the Board recommends that this change be accepted.

Hydro's efforts to meet the present challenge of lower load growth and lower revenues has resulted in a paring of the 1984 OM&A budget from its original forecast level. One of the proposed cutbacks is a $17 million budget cut imposed on the Operations Group which includes four of the largest branches in Hydro and is the largest single Group. The objective is to encourage productivity and efficiency improvements throughout the Group and it is not aimed at any specific work program. The cut will compel trimming because the budget is inadequate to support the Group's forecast staff levels and programs.

Board Counsel argued that Hydro intended to make up the $17 million reduction by including the savings produced by the mothballing of some units at Hearn and Lakeview generating stations ($6.8 million) and the closing of the Niagara Regional Office ($2.7 million). He submitted that these cuts were not of the type originally contemplated when the $17 million productivity incentive was proposed and that the Board:

> ". . . should recognize this fact by removing half of the effect of the so-called Hearn, Lakeview and Niagara productivity improvement from the revenue requirement so as to help restore the original $17 million productivity improvement target."

Mr. Genest submitted that the savings referred to by Mr. Armstrong are precisely the type of restraint which was contemplated when the cost reduction target was developed.

While the Board does not view the mothballing of plants as "constraints on selected programs" as argued by Mr. Genest, it seems clear that the cuts would improve productivity and contribute meaningful cost savings in 1984, which should count towards the $17 million target. The Board therefore declines to treat them differently and consequently recommends that there be no adjustment as proposed by Board Counsel.

However the Board is also concerned about the magnitude of the proposed $17 million productivity cut by the Operations Group and the fact that it is restricted to that Group.

As OMEA pointed out, in the absence of a priority listing of projects to be considered for further trimming, the Board has no choice but to make broad arbitrary non-specific budget reductions in the same manner as Hydro's senior management.

OMEA also pointed out that the 1984 accounting policy changes rather than productivity gains were serving to reduce the growth in OM&A expenses, and if those changes

had been implemented in the 1983 budget, the effect would be a real reduction of OM&A expenses in that year of 0.8 percent over the previous year and a real increase of 2.4 percent in 1984 over the 1983 budget. Mr. Genest argued that the real increase in 1984 would only be 1.8 percent if the effect of the accounting changes was excluded and this he attributed to new plants coming into service.

Noting that Hydro had taken more than $100 million out of an allegedly irreducible 1983 budget for OM&A expenses after the Board had recommended its approval in H.R. 11, OMEA recommended a reduction of $20 million in 1984 OM&A expenses to bring the real increase in 1984 more in line with the 1983 budget. The Board notes that one of the root causes of Hydro's lower revenues is inflation's effect on the provincial economy and the Board is of the opinion that Hydro should undertake an effective and visible role in combating inflation. In order to do this, the Board recommends that Hydro relate its productivity cuts to the inflation related growth in its OM&A budget.

The Board accordingly recommends that OM&A expenses be reduced to eliminate the real growth over 1983 after excluding the effect of accounting policy changes, and for that purpose the Board recommends that Mr. Genest's calculation of 1.8 percent real growth be accepted. This therefore results in a recommended decrease to the revenue requirement of $17 million.

Staff Levels

During 1983 and 1984 Ontario Hydro expects to reduce its regular staff by about 1,250 to a total of 24,000 employees. This reduction will be accomplished by attrition, early retirements and terminations and is mainly due to the scaling down of Hydro's construction activity.

Hydro's senior management appears to be committed to the overall "downsizing" of staff levels throughout the organization. Mr. Nastich testified that Hydro intended

> ". . . to squeeze more out of the resources that (it has) in the corporation both in human resources and in facilities resources".

Hydro's goal is impressive, but the Board notes that "Hydro's Corporate Strategy for the 1980s" refers to staff level reductions in very general and relatively obtuse terms, contains no specific targets and does not give specific direction to the organization's managers.

The only document available to the Board which does include specifics is a Corporate Reference Plan, 1982, which was filed during the hearing with the caveat that it had not received approval of Hydro's management. This document predicts staff levels in the construction area to approximate those of the early 1970's and does speak of reducing staff levels over the 1980's in certain areas of the operation. Overall, the authors predict that Hydro's regular staff levels however will not alter significantly from the level forecast to be achieved by the end of 1984.

It would appear that the only effective direction given on staff levels has been that supplied by the senior management in proposing arbitrary OM&A budget cuts. As Mr. Niitenberg testified, the goal of 24,000 employees by the end of 1984 must be reached as the OM&A budget cannot pay the salaries of any more employees. It appears to the Board that staff level cuts can only be directed by Hydro's senior executives in a generally arbitrary manner. The Board therefore recommends that such budget limitations continue in future years until Hydro's management is satisfied that the goal of a "leaner" corporation as contemplated by the Corporate Strategy Document has been achieved.

The Board also recommends that the staff and compensation levels for non-regular staff be closely examined at next year's hearing as they comprise 25 percent of Hydro's work-force and were not included in the staff from which cuts were instituted by Hydro in 1983 and 1984.

Compensation and Early Retirement Program

The Board, in last year's report, recommended that the practice of Hydro paying overtime to its management and professional staff be closely examined at this hearing. Hydro filed a report on this subject outlining that, as part of Hydro's Voluntary Compensation Restraint Program, the management and professional staff worked an additional 8,414 man days without compensation to which they would

normally have been entitled. During the last six months of 1982 compensable overtime dropped by 58 percent.

In the Board's opinion the present policy for paid overtime is reasonable and meets the needs of cost-cutting and the emergency requirements of operating a large utility. However, the Board recommends that, in future submissions, overtime costs be shown separately by branches as part of the general compensation information.

Hydro's practice of paying engineers in the top quartile of the wage survey published by the Association of Professional Engineers of Ontario was also criticized by the Board in last year's report. Hydro has now concluded that the practice is "not compatible with the approved corporate strategy" and, in its negotiations with its engineers will seek a level for such salaries comparable to the average compensation practices of a selected group of major organizations.

Hydro testified that in 1983 it cost $51 million to provide up to one years salary for qualifying employees taking advantage of its early retirement program. Board Counsel argued that the program should have been designed to provide increased future benefits rather than immediate cash settlements. Mr. Genest pointed out, however, that the alternative was to lay-off employees and that an employee with 25 years service is entitled to a total of one year's salary on lay-off, the same benefit offered by the early retirement program.

Hydro's practice of comparing its employees' compensation to that of employees in private companies and other Crown corporations is reasonable in the Board's opinion. However, the Board has some concern as to the circularity or self reinforcing aspect of such comparison. Furthermore, it is essential that the comparison include the entire compensation package and in particular the policies with respect to lay-offs and early retirements of surplus staff. The Board is of the opinion that Hydro should not take the best features of the various employee compensation packages used for comparison and justify their own compensation package on that basis.

In argument OMEA criticized in great detail the Hay System used by Hydro to determine the salary levels of its approximately 600 Executive Salary Roll employees. The Board has discussed on other occasions its difficulty in dealing with a complicated submission by a party to the hearing advocating a total re-shaping or termination of a long-held and generally accepted policy without the introduction of direct expert evidence. The Board therefore makes no recommendation in this area and suggests that, if OMEA desires to pursue its criticism of the Hay System, it introduce evidence in support of its contentions at next year's hearing.

During the hearing Hydro updated the revenue requirement to reflect changes in the pension fund liability

resulting from the early retirement program. The Board recommends the $3 million increase in revenue in this regard.

Office Space

In last year's report the Board expressed concern about the amount of office space Hydro had under lease in downtown Toronto, specifically the 300,000 square feet in the Atrium at Bay and Dundas Streets. Mr. Nastich testified then that Hydro was looking seriously at moving some employees outside the city core. The Board recommended that it be kept informed of the planning and said that it considered Mr. Nastich's goal to be achievable only over a three to five year term.

At this hearing Mr. Niitenberg testified that Hydro had completed a preliminary report which showed that to construct a new head office of some 1.3 million square feet at one of two sites in Metropolitan Toronto already owned by Hydro, would cost approximately $80 million. He said that Hydro's present goal is to consolidate the lower forecasted staff levels into space which it presently owns or leases.

The Board was not suggesting that Hydro build a new head office outside downtown Toronto but rather that it vacate or sublet the Atrium space because of its relatively high cost and seek lower priced space outside the city core. Even if the presently forecast staff levels do not require further space the Board recommends that the Atrium

space should be vacated as soon as possible. The Board also recommends that it be kept informed of progress in this area.

Major Unforeseen Maintenance

In its OM&A budget Hydro set aside an amount for major unforeseen maintenance, such as destruction by storm of transmission towers or other unpredictable events necessitating major expenditures. Such expenses have been and are projected to be as follows:

(1983 $ Million)	1980	1981	1982	1983	1984
	20.3	22.6	5.3	14.2	18.9*

* ($20.6 million in 1984 dollars)

Hydro testified that the 1984 budgeted amount is based essentially upon past experience, the age of the plant, previous preventative maintenance programs and the value of the net fixed assets in service, which is an increase from $14.8 billion in 1983 to $18.2 billion in 1984.

Board Counsel argued that the $20.6 million budgeted for 1984 should be reduced by at least $6 million based on an average of the actual amounts expended over the past two years. OMEA argued that, as the events causing the maintenance are random and not use-related and the budgeted amounts are based on historical data, the Board should recommend a five year average of $13.1 million, and reduction of the budget therefore by $7.5 million.

Counsel for Hydro argued that, as the forecast for major unforeseen maintenance is designed for a total budget

established on a most probable basis, the co-relation is really between the probability of the failure of a particular asset and the value of the total assets and that this figure is not subject to wide variability.

It would have been more helpful to the Board if Hydro had undertaken a study of this budget item and its relationship to the net fixed asset base in previous years in order to provide a sounder basis for setting the level. Nevertheless, the proposed amount of $20.6 million in 1984 appears reasonable to the Board in relation to net fixed assets and the Board therefore recommends its acceptance.

Management Control System

Board Counsel in his argument urged the Board to recommend abandonment of further development of Hydro's management control system, "Organization & Operation of Ontario Hydro" ("OOOH") at the end of 1984. He pointed out that $900,000 is budgeted in 1984 for its continuation but that the program is now operational and the developmental level of activity has dropped off considerably. He submitted that expenditures should no longer be necessary after 1984.

OOOH has been the subject of a great deal of comment in past hearings and its development by Hydro has been costly. The Board has criticized facets of the program in the past but agrees with Hydro that, like any other large organization, Hydro has the need for some form of management

system. The evidence does not warrant removing any funds for 000H from the 1984 OM&A budget at this time and the Board recommends that Hydro's proposed expenditure on 000H be accepted.

Marketing Initiatives

Hydro has included $10 million in its 1984 OM&A budget to further its objective of increasing electricity's share of the Ontario energy market from 16 percent in 1980 to 20 percent in 1990. Specifically, Hydro intends to expand its marketing initiatives to promote dual energy programs for the residential sector, for example the use of electric plenum heaters to complement fossil-fired heat in forced air systems for greater energy efficiency. As well, the new initiatives include energy advisory programs for the agricultural and commercial sectors and TOU rate structures which are discussed later in this report.

Board Counsel and Counsel for Energy Probe were concerned with the lack of a detailed marketing analysis to support the extra funds needed for the program, including the additional $5 million set aside for marketing initiatives in 1983. Board Counsel pointed out that no detailed estimates have been formulated and no answer to the issue of cross-subsidization among ratepayers has been developed.

Mr. Armstrong noted Hydro's evidence, that electricity prices will exceed gas prices until at least 1988, and submitted therefore that until that time Hydro "will be

effectively chasing the utilization of expensive surplus generating capacity with wasted marketing dollars."
Mr. Armstrong did not advocate the elimination of the marketing initiatives but submitted that the program should be scrutinized closely in future hearings. He argued that half of the $10 million expenditure in 1984 should be removed from OM&A expenses and the new initiatives should be financed from existing programs within the present marketing budget.

Mr. Poch was highly critical of Hydro's new initiative and argued that:

> "With this new approach, Hydro has chosen to reshape the public will to meet Hydro's needs, and at the same time ignoring the broader social costs of such a scheme."

Energy Probe submitted that the budgeted amounts are "excessive in the extreme" given the program's conflict with government policies in the area of acid gas emissions, energy self-sufficiency and conservation, and the uncertainty of a positive economic contribution from the program.

Counsel for both the OMEA and AMPCO, however, supported the program and Mr. Schwartz argued that "not only will such a program lower electricity costs to Ontario consumers, it will also have a positive impact on the whole management philosophy of Ontario Hydro". He submitted that the new program will create incentives to achieve and reward real productivity improvements and will assist in re-orienting Hydro towards reducing costs and increasing revenue.

ONGA was critical of the marketing program because it would increase the weather sensitive load and exacerbate the conflict between northern and southern regions which developed in last year's hearing in regard to seasonally differentiated rates. Mr. Howe also pointed out that the increased peak and off-peak demand created by the marketing initiative will tax the distribution facilities of some municipalities, which may be forced to increase their retail rates to upgrade their distribution systems. ONGA submitted that the program be delayed until Hydro has "sufficient opportunity to adequately study the potential effect of both its operations and those of the municipal utilities".

Hydro's Counsel, in replying to these arguments, pointed out that the cost effectiveness of the various new marketing initiatives is difficult to determine (except for the cost effective plenum heater program) because the new strategy was only developed in mid-March. Mr. Genest said that the cross-subsidization issue would not likely develop because the extra sales will reduce the amount of fixed costs allocated to each customer. The development of greater weather sensitive load has been considered by Hydro, he said, and the risk is considered to be manageable and reasonable. He submitted that the present advertising campaign is designed to create a general awareness of the advantages of electricity and not to encourage conversion to full electric heating. In answer to ONGA's concern about

the adequacy of certain municipal distribution systems Mr. Genest noted that OMEA supported the new marketing initiative.

Energy Probe and ONGA have highlighted potential future problems with the marketing plan about which Hydro is aware, such as the increase in the weather sensitive load and the effect on municipal distribution systems. Their other criticisms are not, in the Board's opinion, sufficient to warrant a recommendation to delay the program pending further study.

The Board is supportive of the marketing scheme for the reasons outlined by Mr. Schwartz, Mr. Davies, Board Counsel and Hydro's Counsel.

Mr. Poch for Energy Probe argued that government support for energy conservation would be detrimentally affected by the program, but the Board does not consider that customers' conservation habits will be altered as a direct result of its implementation. Mr. Poch's concern that Hydro will become more dependent on U.S. coal is not justifiable as nuclear units coming on-stream over the next several years should accommodate any increase in load resulting from the marketing initiatives and overall, these new units will substantially lower Hydro's need for U.S. coal in any case. Similarly, acid gas emissions will decrease as new nuclear units come into service.

The Board recommends that Hydro proceed with the marketing initiatives for 1984, but that it report in detail at next year's hearing on its progress and costs to date.

Hydro's growing prospects for the sale of generation by-products such as cobalt, steam and tritium requires comment. Included in the corporate strategy document is a short section noting that these opportunities must be self-financing and "will require a different management focus".

The "management focus" needed to exploit these new areas, in the Board's opinion calls for private sector, profit-oriented marketing skills. The Board recommends that before major contracts are negotiated external marketing advice should be sought by Hydro and presented as evidence, at least in a preliminary fashion, in next year's hearing.

Labour Relations

Mr. Green on behalf of the Society made "a plea for common sense" in the area of labour relations. He argued that the Board should make a recommendation that Hydro pursue a longer-term goal in its labour relations with the 6,200 members of the Society and cease the "short-sighted" policy of slashing surplus staff.

The Society urged the Board to recommend:

> ". . . an approach to human resources . . . which will ensure long-term reasonable costs and security of service rather than short-term savings".

In spite of Mr. Green's plea the Board is of the opinion that it should make no recommendations as to the dealings which Hydro has or should have with the Society or any other body representing Hydro's employees.

Restraint Program

Hydro's evidence was that its revised proposal incorporated labour cost escalations in the OM&A budget at five percent for 1984. In regard to the administered price provisions of the Inflation Restraint Act, 1982 Board Counsel submitted that "an unusually large proportion of [Hydro's] costs are set externally" and the witnesses stated that Hydro "had conformed with the Ontario government's rate restraint program." None of the parties challenged this contention.

It appears to the Board from the evidence that Hydro's submission meets the restraint requirements, and notes that the administered price provisions, unless extended, are due to expire on December 31, 1983.

FINANCIAL POLICY

Introduction

Hydro presented a review of thirteen of its financial policies some of which it proposed to alter with the net effect that the provision for the 1984 revenue requirement is $100.3 million less than it would have been without such changes. A list of these policies is included in Table 7 on the following page.

Hydro argued that the changes were the result of directives by the Canadian Institute of Chartered Accountants ("CICA"), and the need for a more systematic method of recovering losses as Hydro was facing a substantial loss of assets and the old policies were exacerbating rate increases in 1984 and 1985.

The Board recommends approval of all of these policies except where otherwise noted in this report.

Exchange Gains or Losses on Outstanding Debt

The present accounting policy does not account for any potential gain or loss on foreign debt on Hydro's balance sheet until the debt is due within a year. Hydro now proposes to recognize annually the potential exchange gain or loss on outstanding foreign debt and amortize that amount over the remaining life of the debt on an annuity basis. The result would be an increase in the 1984 revenue requirement of $36 million.

TABLE 7
SUMMARY OF FINANCIAL POLICIES

	Policy Description	Increase (Decrease) in Revenue Requirement $Million
1.	Level 1 corporate accounting policy	nil
2.	Accounting for the cost of commissioning energy (Page 40)	nil
3.	Pricing of power used internally by Ontario Hydro (Page 35)	nil
4.	Costing of steam used in the production of heavy water (page 36)	nil
5.	Accounting policy for the translation of foreign currency (page 75)	36
6.	Accounting policy for exchange gains and losses resulting from the premature retirement of foreign debt (page 77)	(7)
7.	Accounting policy for rescheduled construction projects (page 79)	(32)
8.	Accounting policy for classification of training costs as capital or current operating (page 80)	(35)
9.	Accounting policy for the classification of project development costs as capital or current operating (page 75)	(6)
10.	Accounting policy for declaring common facilities in service (page 75)	(94)
11.	Accounting policy for past irradiated nuclear fuel costs (page 32)	(0.3)
12.	Heavy water accounting concept (page 86)	nil
13.	Pricing and accounting policy for sales and leases of heavy water (page 75)	nil
14.	Accounting policy for deferrals and cancellations (page 75)	38
	TOTAL	(100.3)

The effect would be to include in rates for each year a fair share of the exchange costs for ultimately discharging that debt rather than include all such exchange costs in the rates for the final year of the debt.

The Board agrees with this policy change as it would effectively spread exchange gains or losses to all those customers who derive the benefit from the assets financed by the debt. As well, the Board sees merit in the rate smoothing aspect of the proposed policy as it would avoid burdening customers in the last year of the debt with all the exchange costs of debt maturing in that year.

The Board therefore recommends approval of this policy change.

Exchange Gains or Losses on Premature Retirement of Debt

Gains or losses on the premature retirement of debt are presently included in the accounts for the year in which the transaction takes place. Hydro now proposes that potential exchange gains or losses be realized and amortized over the average life of debt (in the same currency) issued during the calendar year prior to the redemption. The effect of this would be to lower the revenue requirement by $7 million in 1984. Hydro argued that this policy would be consistent with the CICA guidelines and result in the realized exchange gain or loss being spread over the period of the refinanced debt.

The Board is of the opinion that to spread this realized exchange gain or loss over the term of new debt would amortize its effect over too long a period. A 20 year bond, two years from maturity, could be prematurely retired and the exchange gain or loss would be amortized over a further 20 to 30 year period. This would effectively spread the cost over several generations of customers -- an effect which in the Board's opinion is unacceptable.

The Board notes that with the proposed policy on exchange gains or losses on outstanding debt, Hydro's customers would pay amortization annually on recognized but unrealized exchange gains or losses and so they would have paid already for (or benefited from) part of the exchange gain or loss that would be realized on a premature retirement. Indeed an amount equal to the unamortized portion of the realized exchange gain or loss would remain to be amortized whether the debt was allowed to mature or was retired prematurely. The unamortized portion of the realized exchange gain or loss should therefore, in the Board's opinion, be spread over the remaining life of the debt and not over the life of the replacement debt, which will have its own exposure to exchange gains or losses.

The Board agrees with Hydro's argument that the annuity method of amortization should be used for consistency with the proposed foreign exchange procedure outlined previously and recommended by the Board. The Board therefore

recommends that the policy on exchange gains or losses resulting from premature retirement of debt be accepted as proposed, except that the term of the amortization be the remaining life of the debt, rather than that of its replacement. This change is not expected to materially affect the revenue requirement.

Project Extensions

Hydro presently charges to current operations any interest accumulated on capital projects whose in-service date had been extended for more than one year. At this hearing it proposed to capitalize that interest if, during such extension, design and construction activities proceed but at a reduced rate and if there is still a reasonable expectation of completion of the project itself. The object of the policy Hydro argued, is to charge the cost of an extension to those customers who obtain the benefit of the project. The policy change would reduce Hydro's revenue requirement for 1984 by $32 million.

The essence of this change is the application of judgment to permit stretching out the design and construction of a project in order to defer its in-service date, while still maintaining appreciable design and construction activity as well as assurance of economic viability of the project upon its completion, in order to avoid conditions which would require interest to be expensed rather than capitalized.

The Board recommends acceptance of this change in policy subject to the concerns outlined in the section on capital cost control elsewhere in this report.

Capitalized Training Costs

Hydro originally estimated that this accounting policy which involves the capitalization of the costs of training initial staff for major new facilities would reduce the 1984 revenue requirement by $43 million. During the hearing this figure was adjusted to $35 million with a corresponding increase in OM&A costs of $8 million and the Board recommends acceptance of this increase in OM&A costs.

In support of the change, Hydro cited several examples in the airline and the extractive industries that capitalize training costs as well as the U.S. regulatory accounting standard which permits capitalization where the training is related to facilities which are not conventional or are new to the company's operation.

All Counsel except Mr. Poch for Energy Probe agreed, at least in principle, that some training costs should be capitalized. Mr. Armstrong submitted that the costs should not be amortized over the life of the nuclear station (40 years) but rather over 10 years and Mr. Schwartz, for several reasons argued that the whole policy should be delayed until the next hearing when Hydro could give further evidence on this subject.

The Board agrees with the general principle that specialized training costs should be capitalized, but is concerned with the argument advanced by Mr. Poch that the average duration of employment of Hydro's staff is less than one half of the life of the nuclear station and in any case an employee will probably not remain in this job for the entire time he is employed by Hydro. As well, the evidence showed that some of the examples of companies which do capitalize training costs (Wardair, Nordair, Gulf, Petrosar and CP Air) amortize them over a much shorter period. Once the unit is in service, Hydro has no plans to treat these costs as anything other than normal operating costs.

In the Board's view the capitalization of specialized training costs as proposed by Hydro will cause such costs to be more equitably distributed to current and future customers but the Board considers a ten year amortization period to be appropriate than the 40 years proposed by Hydro. The Board recommends approval accordingly.

The Board estimates that amortization over 10 years rather than 40 will increase the 1984 revenue requirement by $1 million, which it recommends.

The Board notes however that Hydro's evidence on the magnitude of those trainings costs to be capitalized was not entirely satisfactory and recommends that further evidence in this regard be filed at next year's hearing.

FIXED CHARGES

Introduction

Hydro's fixed charges represent mainly the interest and foreign exchange costs of financing fixed assets in service and depreciation charges for the recovery of the capital costs of those assets. In 1984 as shown on Table 8 below those costs amount to $1,576 million, an increase over 1983 of $403 million.

TABLE 8
FIXED CHARGES

$Millions	1982	1983	1984
Interest & Foreign Exchange	743	795	1096
Depreciation	348	378	480
	1091	1173	1576

Source: Table 5D1; Ex. 7.1

Hydro during the hearing decreased its requested interest expense as a result of revised interest capitalization calculations. The result is a decrease in the revenue requirement of $35 million which the Board recommends. As well, Hydro increased its decommissioning charges by $2 million to reflect revised interest and escalation rates and the Board recommends this change be accepted.

This section includes the Board's comments on capital cost control, depreciation, cash management and Hydro's debt retirement program.

Debt Retirement Program

In order to enhance the marketability of its bonds, Hydro maintains a program for the premature retirement of debt distinct from the requirement under the Power Corporation Act. Hydro filed at this hearing a comparison of that program with a sinking fund alternative which the Board recommended in H.R. 10 and 11 that Hydro examine.

Board Counsel considered that Hydro's present policy of premature retirement of debt offers more flexibility than a sinking fund and the Board after examining the study agrees and recommends acceptance of Hydro's present policy.

Cash Management Study

Hydro filed a progress report on the first of three phases of a cash management study designed to improve Hydro's cash flow. The report states that ten out of twelve recommendations have been accepted by Hydro's management and seven of these are in the process of implementation with the balance requiring further study. Hydro indicated that the remaining two phases of the study would be completed this year.

The progress report indicated that because of the forecast of lower interest rates, the total potential annual savings from Phase I were now $5 million, not $9 million as originally estimated by Hydro and for 1984 because only part of Phase I is implemented, the savings were estimated to be only $800,000.

Board Counsel contended that Hydro was moving far too slowly in this area and he submitted that $4.2 million of unrealized savings were "left on the table" by Hydro.

Hydro's Counsel argued that many of the recommendations in Phase I have not been implemented because of external forces and some may not be cost effective or may require detailed feasibility studies.

The Board as in the past is of the opinion however, that Hydro should continue its efforts to secure an amendment to the Power Corporation Act to allow it to charge an appropriate rate of interest on its overdue accounts. Hydro's witnesses testified that 16 to 20 municipalities "have a relatively worse payment history than the other municipalities" but that the situation has improved from 1982 when the average accounts payable was $12.3 million. In the first three months of 1983, the average accounts payable by all municipalities was $5.1 million. Abnormally high interest rates in 1982 and Hydro's inability to match those levels in its collection process encouraged some municipalities to delay payment to Hydro.

The Board therefore recommends again that Hydro seek an amendment to the Power Corporation Act to correct this anomaly. The Board also recommends that Hydro prepare a list of consistently delinquent municipalities for introduction into evidence at next year's hearings if requested by the Board to do so at that hearing.

Depreciation

By Hydro's accounting policy the annual depreciation expense of an operating heavy water plant is charged to the heavy water itself and does not impact on rates until the heavy water is placed in a reactor. The heavy water is then depreciated over its deemed service life to the year 2040.

Only one heavy water plant at the Bruce Nuclear Development Project will be in operation for the whole of 1984. Bruce Heavy Water Plant ("BHWP") A which along with BHWP B is forecast to run at 80 percent utilization for 1983, will cease production in mid 1984 and be mothballed at a cost of $10 million. Hydro determined that commencing in 1982 the unamortized portion of the BHWP A cost should be charged to the cost of heavy water over a remaining service life of 2.5 years. BHWP C was cancelled in 1975 and its costs written off against net income in 1975 and 1976. Construction of BHWP D was stopped in 1979 and the cost charged to current operations over a 12 year period starting in 1982.

Because of expected future demand for heavy water, either BHWP A or BHWP D may come back into service sometime in the future. Hydro is presently determining which plant would be less expensive to put into operation if it is required and as Mr. Genest pointed out, Hydro was "unlikely (to) maintain two heavy water plants in a mothballed state."

Hydro has divided its heavy water inventory into two parts: operating reserve for use in operating reactors and future use inventory retained for units coming into service, for loss make-up at an operating station and for sales or leases to third parties. Loss make-up is charged to current operations. The operating reserve inventory is depreciated unlike the future use inventory which is not. The future use inventory is treated like a fixed asset under construction and therefore any costs associated with it are capitalized. At the time of assignment of any of the future use inventory to a particular unit, that amount is capitalized to the operating heavy water pool at the average unit cost at that time. However, once the reactor is in service the heavy water is depreciated together with the rest of the in-service heavy water, over its deemed service life as previously noted.

The total cost to 1984 customers for heavy water is $237 million which includes the cost of the loss make-up; the interest and depreciation on heavy water currently in service or in the operating reserve; and the cost of the deferral of BHWP D, excluding the net income component.

The Board is concerned that in regard to the future use inventory, its cost is increased annually by the operating, depreciation and interest costs of the in-service heavy water plants together with the carrying charges of the inventory itself. All this is capitalized and is spread over many decades and is collected in rates over many

decades. Hydro has reduced the future use inventory from 1800 metric tonnes to 400 metric tonnes and is reviewing the possibility of reducing it further. The Board's concern is that despite such reduction, the cost of this inventory should not be allowed to increase solely to keep present rates low.

In respect to 1984 rates, the Board is concerned about the accounting treatment to be accorded BHWP A which is scheduled to cease production in mid 1984. The Board is of the opinion and recommends that depreciation of the plant while it remains in-service in 1983 and 1984 should continue to be based on a 20-year service life and that the undepreciated value on decommissioning in mid-1984 should be deferred and amortized over ten years.

The consequence of this recommendation is an increase of $7 million to the 1984 revenue requirement. As the Board's concerns transcend the treatment of BHWP A, it recommends that Hydro be prepared to review further its accounting policies, practices and procedures in respect of heavy water at next year's hearing.

Lennox Service Life

Lennox consists of four oil-fired generating units that have been mothballed by Hydro.

Board Counsel submitted that the evidence points strongly to the conclusion that this out-of-date oil-fired

plant will never be returned to service and that it should be written off over a ten-year amortization period begining in 1984.

Hydro's Counsel stated that the evidence did not support Mr. Armstrong's argument and notwithstanding that oil is a relatively expensive fuel, few people are required to maintain the plant and that it will be an economic source of peaking capacity when required in the late 1990s.

The Board recommends that Hydro make a thorough review of Lennox for presentation at the next hearing which should include a study of its potential usefulness in the 1990s, the cost to decommission and a proposal to accelerate its write-off.

System Expansion

Dr. Zimmer pointed out that Hydro's excess capacity, together with off-peak load shifting and the growing concern about acid rain in the U.S. has diminished the likelihood that Nanticoke will continue to be used or useful in the future. As a consequence, he suggested that the high voltage transmission lines which are planned for south-western Ontario may not be necessary.

He argued that last year's rate increase imposed serious economic difficulties on many large farmers who use substantial amounts of electricity and that this year's increase "is going to have real repercussions". He also

argued as did some other intervenors that examination of Hydro's system expansion program should be part of a future reference from the Minister.

The Board in previous reports has commented on arguments concerning system expansion and has determined that the subject matter is beyond its terms of reference and therefore it makes no specific recommendation in regard to such submissions.

Capital Cost Control

In Both H.R. 10 and H.R. 11 the Board expressed concern in respect of capital cost control but in each report it concluded that there was insufficient evidence on which to make a recommendation. In this hearing Hydro pre-filed, in addition to the latest issues of the Capital Program Status Report, a document entitled "Planning and Control of Major Capital Projects in Ontario Hydro" which describes the processes employed by Hydro to control its major capital costs.

Hydro also filed its Corporate Planning References document, outlining the essence of its 10 year integrated business plan. Board Counsel said that while this documentation is subject to change, he considered that it provided a very useful insight into Hydro's present plans. Nevertheless he submitted that the Board is still left with insufficient evidence on which to make firm conclusions with respect to the adequacy and effectiveness of the control of Hydro's capital costs.

He argued that Hydro had devoted some attention to the control of costs up to the point of the release estimate but, he said, it is not clear, based on the evidence, that there is significant or effective management control over capital costs after the release estimate and more particularly after the definitive estimate.

He noted that the total estimated cost for Pickering B, Bruce B and Darlington totalled $8.581 billion when released and has now grown to $21.858 billion and may exceed even that amount when construction is complete. Mr. Genest pointed out however that the release estimate excluded heavy water and that the comparable current estimate is $17.864 billion. Board Counsel acknowledged that most of the cost increase was due to higher than predicted rates of interest and inflation and so beyond Hydro's control but noted that the 13 percent attributed to scope changes amounts to more than $2 billion. He pointed out that most of the scope changes appeared to result in net increases and that none of the modifications to capital cost control have had any effect upon the control of costs after the work is released.

He contended that Hydro's capital budgets do not identify productivity or cost saving programs and, that there is no post appraisal analysis either. He suggested that an independent review of Hydro's capital budget procedure may be required.

Mr. Genest contended that the evidence did not support Board Counsel's attack and he provided examples of cost reductions. He contended that the post-release control was comparable to the pre-release control and that audits do disclose opportunities for improvement. An independent review was therefore not necessary.

In the Board's opinion there are encouraging signs that Hydro's integrated business planning will provide a sounder basis for system expansion and there are indications of some improvement in capital cost control but there is still a lack of and need for a concise but comprehensive cumulative cost summary by project. Cost components such as interest and inflation with variances between estimates and actuals would be helpful to the Board as well as values expressed in real terms on a deflated and discounted basis.

The Board is of the opinion that Hydro should recognize and allow for the seemingly universal tendency to understate the cost and time required in completing major undertakings. Almost invariably Hydro's definitive estimate exceeds the release estimate substantially and the Board recommends therefore that the release estimate be inflated by an experience factor to anticipate and offset such difference.

Hydro follows the practice of segregating the committing and controlling authorities and the Board senses in this schism a lack of control because those preparing the definitive estimate do not appear to be committed to the release estimate.

In this respect the Board was astounded at Mr. Genest's revelation that the release estimates for the nuclear plants did not include the cost of the heavy water which is a capital item essential to their operation and which accounts for a substantial part of their total costs.

The Board therefore recommends that Hydro produce at next year's hearing a comparison of its capital budgeting and cost control process with that followed by comparable U.S. utilities and the Board recommends the comparison include the material filed with those utilities' regulatory boards in regard to this subject.

Board Counsel submitted that the Board has an obligation in this hearing to consider the Darlington deferral decision and decide whether the treatment proposed results in an equitable sharing of costs between present and future customers. He noted that while the reasons for deferral included uncertainty as to the load and interest rate forecasts, the principal purpose of deferring Darlington was to reduce Hydro's capital requirements in the next few years.

The two year deferral reduces public borrowing in years 1983 to 1985 by several hundred million dollars but increases the ultimate cost by some two billion dollars and brings into question the potential cost advantage of its output.

However, in light of the terms of reference for this hearing, the Board is making no recommendation in this regard.

NET INCOME

Introduction

Net income is comprised of a mandatory provision for debt retirement supplemented by a discretionary provision for rate stabilization and contingencies. Apart from the minimum statutory provision, the determinants of the level of net income for rate making purposes are any shortage of funds for borrowing which would have to be made up from net income, the maintenance of financial soundness in accordance with certain financial indicators that have been established as standards, and the magnitude and pattern of rate increases.

Hydro established the debt ratio and the interest coverage ratio as the prime indicators of financial soundness in a net income study in 1975, following the report of Task Force Hydro. Based on input from the financial community a range of 0.80 to 0.82 was set for the debt ratio and a target of 1.35 for the interest coverage ratio. While these targets were considered in subsequent rate proposals they were never fully achieved because of the general economic climate and anti inflation programs.

The reference letter for the rate submission has usually contained restrictions on borrowing or stipulations as to the value of one or both of these indicators but, in H.R. 8 (1979) in the absence of such stipulation, the Board, in view of the interdependence of the financial soundness of

Hydro and the Province of Ontario, recommended the need for policy direction from the government as to how much Hydro should borrow relative to how much it should collect from its current customers.

For the next two years the reference stipulated the financial criteria pending a report from a government group set up to study the matter. Last year, with no financial criteria stipulated by the reference letter, the Board included a review of factors affecting net income determination in its report but refrained from making a recommendation on net income policy.

This year, after reviewing Hydro's approach to the determination of net income requirements, the Treasurer of Ontario stated in a letter to the Chairman of Hydro:

> "While Ontario Hydro will no doubt have a number of objectives in evaluating a net income policy framework, from a public policy perspective there are three principles which I believe must be upheld:
>
> 1. Hydro's operations must support its debt; that is, Hydro must consistently earn sufficient net income to assure that its debt is self-supporting, given the presence of the Provincial guarantee but without direct Provincial financial support or subsidy.
>
> 2. The autonomy of the Ontario Hydro Board of Directors, as set forth in legislation and the recently signed memorandum of understanding, should not be compromised in any Government policy advice or direction on the net income question.
>
> 3. The OEB review process is useful and productive, particularly in providing a forum for public participation. The precise level of net income which the OEB recommends as an appropriate component of Ontario Hydro's

> revenue requirement should be determined by the OEB, generally without specific policy direction on this matter from the Government.
>
> The priority which the Province places upon the maintenance of its prime credit status requires that Hydro continue to plan for, and achieve, financial results that do not prejudice Ontario's credit rating. As you well know, even the prospect that Hydro's operations were becoming incapable of supporting its debt could impair the Province's prime credit status. For this reason, I would be concerned if either Hydro's financial planning, or Ontario Energy Board recommendations, were to contemplate any trend toward a material deterioration in Hydro's debt to equity ratio or interest coverage performance."

Hydro took the Treasurer's letter to reaffirm its approach to the determination of net income.

Clearly, while the Treasurer's letter stresses the importance of financial soundness, it does not preclude the Board from making recommendations which it considers to be appropriate. In furtherance of this reasoning, there was no stipulation as to financial soundness criteria in the reference letter this year.

Hydro, for this hearing, provided a study on net income policy. It reviewed the background and proposed two new financial indicators to supplement the interest coverage ratio which, without the refinement for interest on provision accounts, were defined essentially to be:

$$\text{Quality of Interest Coverage} = \frac{\text{Net Interest}}{\text{Gross Interest}}$$

$$\text{Cash Flow Coverage} = \frac{\text{Internally Generated Cash Flow} + \text{Net Interest}}{\text{Gross Interest}}$$

The use of these supplementary financial indicators was supported by Messrs. Kierans, Carmichael and Black in their testimony on behalf of Hydro.

Hydro stated that the study on net income was not approved as policy by its Board of Directors until after the rate submission, but that the rate submission was nevertheless consistent with the subsequently approved policy.

Level of Net Income

Hydro proposed that the net income in 1984 be $404 million, corresponding to an overall average rate increase of 9.7 percent. The following table sets forth Hydro's proposal including related ratios.

TABLE 9
LEVEL OF NET INCOME

		Actual		Budget	Proposal	Forecast	
		1981	1982	1983	1984	1985	1986
For Debt Retirement	$M	153	168	181	209	261	292
For Stabilization of Rates and Contingencies	$M	254	180	260	195	(21)	241
Total Net Income	$M	407	348	441	404	240	533
Average All Customer Rate Change*	%	9.4	9.6	8.4	9.8	11	9
Toronto CPI	%	12.5	11.3	9.5	7.0	9.0	8.5
Debt Ratio	%	0.841	0.845	0.844	0.844	0.844	0.835
Interest Coverage Ratios Level	%	1.30	1.20	1.22	1.18	1.09	1.20
Quality	%	0.54	0.41	0.38	0.47	0.64	0.65
Cash Flow	%	1.09	0.86	0.83	0.92	1.01	1.12

Source: Exhibit 4.10 - Tables 8.1, 9.3, 9.4

*Including Power District

Hydro pointed out that its plan through 1986 was to accommodate the in-service charges for several new generating units by relaxing the interest coverage requirement temporarily, in order to help suppress and smooth the rate increases during the economic recovery, while holding the debt ratio constant. Shortage of capital was not a factor in determining net income for 1984.

Board Counsel recommended that net income in 1984 be $350 million, being about the same level as Hydro achieved in 1982. He calculated that his net income recommendation, taken together with the other adjustments he had recommended, would produce an average rate increase in 1984 of 5.6 percent. He pointed out that this level of net income would provide a debt ratio of 0.845, the same as achieved in 1982 and barely more than the 0.844 in Hydro's original proposal.

He noted that, while it would only provide an interest coverage of 1.15, compared to the 1.18 in Hydro's original proposal and the 1.20 achieved in 1982, it would provide an improvement in cash flow coverage to 0.90, from 1982's actual of 0.86 and 1983's expected 0.79 but would be less than 1984's planned 0.92. Board Counsel said his recommended level of net income for 1984 is consistent with Hydro achieving a cash flow coverage target of 1.0 by 1985 as originally intended.

Hydro's Counsel stressed that a cash flow ratio of less than one means borrowing money to pay interest and that

Hydro's proposal already includes borrowing some $825 million from 1982 to 1984 solely to pay interest on outstanding debt.

Board Counsel submitted that cash flow coverage is a better indicator than net income coverage of the ability of the operation to pay interest to the lender and repay the lender's investment, and contended that improvement in the cash flow coverage was the key to improved financial soundness.

Board Counsel noted that, while the interest coverage ratio had been calculated in the past on the basis of income before extraordinary items, in 1982 Hydro had deducted 10 percent of the loss of BHWP D from income as a normal operating expense instead of treating it as an extraordinary item. He submitted that, for comparison of the interest coverage ratios from one year to the next to be meaningful, consistent treatment was required, and that the deduction for BHWP D should be added back to net income in calculating the interest coverage ratio.

In reply Counsel for Hydro pointed out that, while the amortization costs decrease the interest coverage ratio, they do increase the cash flow coverage ratio, which is where the financial community would expect to see the impact.

It seems to the Board that this makes the cash flow coverage ratio the more meaningful indicator of financial soundness as contended by Board Counsel. Indeed, deduction

of amortization of an extraordinary item from income before taking the interest coverage ratio could be considered to be somewhat misleading.

Board Counsel noted that the financial market continued to accord Hydro high confidence despite the marked deterioration of its financial soundness indicators in 1982. He submitted therefore that 1982 results are adequate for the purposes of financial soundness in the present economic times.

AMPCO considered that the financial community looks beyond Hydro to the Ontario economy and is prepared to accommodate a temporary decline in financial soundness because of the prospect of solid improvement in 1986, when the rate of generation addition will slow after peaking in 1984 and 1985.

While Hydro's Counsel agreed that the financial community does not react to a single year's results but rather evaluates trends, they cautioned that the "wait and see" approach should not be viewed as a licence to perpetuate unsatisfactory financial results.

He faulted Board Counsel's and AMPCO's proposals for being based on the erroneous assumption that incremental ratcheting down of Hydro's proposed level of soundness is always acceptable and for giving insufficient consideration to the prospective critical need for income and rate relief in 1985.

The Board is satisfied, however, that in the circumstances neither proposal would cause undue concern in the financial community with Hydro's on-going financial status.

AMPCO recommended that 1984 net income be derived from an interest coverage ratio of 1.15 which, it said, would keep the debt ratio unchanged, reduce the revenue requirement by $69 million and the rate increase by 2.0 percentage points, encourage use of excess electrical capacity to enhance Hydro's financial position, stimulate economic recovery and signify by example government policy to suppress inflation.

AMPCO was not convinced that there was merit in the supplementary indicators of the quality of interest coverage and cash flow coverage, which it considered would require an unrealistic influx of funds during high construction periods. It recommended continued primary reliance on interest coverage and debt ratio.

AMPCO recommended that Hydro establish a target for the debt ratio but did not specify what it should be. The Board is satisfied however that setting an interest coverage target and tracking the consequent debt ratios, as favoured by the investment community and adopted by Hydro, is preferable to setting a target for the debt ratio.

Energy Probe recommended that the 1984 net income be increased in order to improve the debt ratio so that it would in turn provide a financial soundness buffer in 1985, when interest coverage is expected to be low and the rate increase is expected to be high.

OMEA was concerned in general that excess capacity was diminishing Hydro's real equity, that Hydro's net income was so low that it had contributed to the Darlington deferral decision with its attendant added cost, and that current customers are benefitting unduly at the expense of future customers by deferral of costs. It submitted that there was a need to smooth rate increases by paying more now and less later and, because the price elasticity of demand is insufficient to support lowering of prices, artificially low prices must be avoided. OMEA considered that moderate real increases in price are the realistic scenario.

OMEA adopted Mr. Kierans' recommendation that Hydro should achieve an interest coverage ratio of not less than 1.20, that the debt ratio should not be increased, and that Hydro should strive to improve both ratios.

OMEA suggested that some of the cost reductions found should be used to increase net income rather than reduce the rate increase. OMEA recommended a nominal rate increase of 7.5 percent in 1984 which with inflation taken at 5.5 percent would mean a real rate increase of 2.0 percent.

ONGA expressed concern at the potential impairment of the province's prime credit status in submitting that Hydro's new net income policy is clearly inconsistent with its rate proposal, that the use of Hydro's new net income policy to set the net income target for 1984 would require a 16.7 percent rate increase, and that overriding the financial soundness targets in order to keep rates artificially low is not in the best interest of all concerned.

ONGA adopted Mr. Kierans' recommendation that the interest coverage ratio for 1984 be set at not less than 1.20, that the debt ratio for 1984 not be allowed to increase beyond the 0.845 level, and that subsequently there be a steady reduction of the debt ratio to the 0.80 level.

Mr. Genest agreed that there was merit, as suggested by OMEA and Energy Probe, in retaining the indicated cost reductions in net income, in order to improve financial soundness and lessen the rate increase in 1985, rather than using them to reduce the 1984 rate increase.

In the opinion of the Board however, the emphasis is still on inflation restraint and, while rate smoothing is a consideration and early restoration of sounder financial status is important, a better balanced approach in the present economic situation is represented by Board Counsel's submission that net income be set at $350 million for 1984, which level the Board recommends as a maximum, in view of its comments on net income policy in the next section.

It should be noted in regard to the level of net income that the accumulation of net income constitutes equity as shown in Table 10.

TABLE 10

	Actual				Budget		Proposal		Forecast			
	1981		1982		1983		1984		1985		1986	
	$M	%	$M	%	$M	%	$M	%	$M	%	$M	%
Equities accumulated through debt retirement appropriations	1,804	10.2	1,971	9.5	2,151	9.2	2,362	9.1	2,623	9.5	2,915	9.9
Reserve for stabilization of rates and contingencies	759	4.3	940	4.6	1,173	5.0	1,348	5.2	1,327	4.8	1,568	5.3
Contributions from the Province of Ontario as assistance for rural construction	127	0.7	127	0.6	127	0.6	127	0.5	127	0.5	127	0.4
Total Equity	2,690	15.2	3,038	14.7	3,451	14.8	3,837	14.7	4,077	14.7	4,610	15.6
Net Assets	17,757	100.0	20,662	100.0	23,364	100.0	26,014	100.0	27,701	100.0	29,512	100.0

Source: Ex. 4.10, Table 8.2

Furthermore, it should be noted therein that Hydro planned to increase the discretionary Reserve for Stabilization of Rates and Contingencies to 5.2 percent of net assets in 1984 from 5.0 percent in 1983, while Board Counsel's proposal would keep that ratio the same as in 1983 but up from 4.6 percent in 1982.

Moreover, the Board has some reservations as to the debt ratio.

In H.R. 10, the Board expressed a concern:

> ". . . that what is ostensibly a provision for the future cost of IFM and decommissioning charges really has the net effect in the long run of increased funding by non debt input akin to net income."

In H.R. 11, the Board commented that:

> "Hydro suggested in evidence that the provision accounts can be taken to be debt only if invested in Hydro facilities. The Board considers that these amounts can be considered more like equity. The Board understands that it is largely a matter of accounting convention; yet the way in which the accounts are shown affects the ratios derived from them, which in turn, affect the level of net income."

Despite these comments Hydro has not seen fit to change its definitions, nor to address the issue of continuing to treat the accumulated provisions as debt.

In reviewing the evidence in this hearing the Board doubts that the accumulated provision accounts should continue to be treated as debt in computing the debt ratio. Consequently it appears to the Board that Hydro's debt ratio could be overstated at 0.844 and might be as low as 0.836.

The Board therefore recommends that Hydro specifically address this issue in next year's hearing.

Board Counsel drew attention to the reduction of $60 million in the value of the net additions to fixed assets as a consequence of Hydro's updated economic outlook and submitted that the net income requirement be reduced by $1 million, being the amount of the impact, as estimated by Hydro.

Mr. Genest noted that net income determination is an aggregate of many factors and while he agreed that a change in one factor would tend to be directionally indicative of changes in the final determination, he objected to Board

Counsel's recommendation that the Board consider correlating borrowing requirements to net income.

The Board is satisfied that reduced borrowing reduces interest expense which lowers the net income required for a given interest or cashflow coverage. It has taken this effect into account in its determination of the net income requirement.

The financial ratios should not be altered significantly however because this additional interest expense will be offset by the reduction of interest expense as a consequence of the reduced borrowing of $60 million resulting from the economic update.

Hydro long ago rejected Task Force Hydro's recommendation that return on rate base be a principal criterion of financial soundness. With Hydro emphasizing its regulatory role, however, it might be appropriate to reconsider the use of return on rate base at least as a check on the reasonable level of net income to charge present customers. That however would require the determination of those assets that are used or useful for inclusion in rate base, a determination which has not been made.

Net Income Policy

Mr. Genest suggested that the Board endorse Hydro's new net income policy and supporting document "A Review of Net Income Targets". While the Board considers Hydro's new net income policy an improvement, it is inclined to view the

cash flow coverage ratio as more meaningful than the interest coverage ratio for reasons stated earlier. Furthermore, the Board considers that Hydro's responsibilities transcend its mandated recovery of costs and that insufficient consideration has been given to competition and inflation.

In respect of competition, Hydro considers price elasticity of demand to be so small as to be negligible and, in failing to close the loop by recomputing results for the resultant rate increase rather than the assumed rate increase, it has in effect assumed a zero elasticity for the purpose of this rate submission. Yet Hydro in its planning documents states:

> ". . . the substitution of electricity for oil and natural gas is very sensitive to the gap in their respective retail prices."

While Hydro is beginning to address the greater utilization of its excess capacity and its new Marketing Branch is looking to the heat sensitive market, there is no incremental load forecast to reflect the significant marketing expenditures that have been budgeted.

Such a situation would, in a profit motivated, marketing oriented business, normally call for a lower rather than a higher price increase to help stimulate demand, but Hydro appears to have made its rate determination based on cost recovery to the exclusion of marketing considerations.

This situation has been aggravated by the announcement, subsequent to the hearing of evidence, of a Federal/Alberta agreement to hold prices of oil and gas at existing levels through 1984.

Hydro is thus confronted with a substantial real decrease in the competitive pricing of gas and oil and a significant reduction of inflationary pressure beyond the levels Hydro took into account in its rate submission. This together with the statement of the President of Union Gas Limited, about the same time that:

> "Electricity now has replaced oil as the main competitor of natural gas in the Southwestern Ontario residential market. However Union Gas is continuing to outsell the competition. Where we have distribution lines nearby we are attracting new residential customers in numbers three or four times greater than electricity."

would seem to indicate the need for Hydro to accelerate and intensify its marketing thrust and to rethink the level of its proposed rate increase and the underlying net income level.

In respect of inflation, the Board expressed its concern during the hearing that Hydro's planned increase of 9.7 percent, at nearly double the going rate of inflation, could be perceived to be inappropriate.

Hydro's reaction was that it would be futile for it to try to control inflation by itself because the cost of electricity has such a small impact on inflation and that a lower increase now to help suppress inflation, would mean the need for a higher increase later, which Hydro was

striving to avoid. Hydro indicated however that it had not evaluated in a broad sense the favourable impact that a sustained, broadly based, concerted drive to achieve and maintain low inflation rates would have on Hydro's future costs and rates. Hydro appears to have disregarded the influence of its example on the community in assuming that the level of net income and the amount of the rate increase would have negligible effect on the rate of inflation and vice versa.

Furthermore, there was no indication that Hydro favoured extension of the restraint program in Hydro's own interests but there was evidence that the economic viability of future projects could be dependent upon suppressed inflation.

Hydro has set for itself a goal of no real increase in rates over the next decade. By this it is meant that Hydro's rate increases compounded will not exceed the growth in inflation over the next ten years. Hydro however plans rate increases that exceed inflation in the early years and hopefully will compensate for such excess by rate increases less than inflation in later years. Hydro admits that this approach favours it at the expense of its customers. A fairer and more commendable but more challenging target would be to hold the rate increase each year below the inflation rate. Yet, when confronted with lower costs than anticipated, Hydro opted to increase net income rather than lower rates, in order to improve its financial position and

reduce its need for future rate increases. This prescription for inflation was endorsed by some intervenors but in the Board's opinion concerted reinforcement by the feedback of lower rates throughout the economy would be more effective in holding down future costs and rate increases, because most of Hydro's costs are inflation indexed or inflation dependent. After keeping its rates below inflation in 1981 and 1982 Hydro imposed a rate increase of 8.4 percent in 1983 on a recessionary economy, whose inflation rate is running well below 6 percent. The inflationary reduction brought about by the efforts of others will benefit Hydro nevertheless.

In the Board's opinion the control of inflation is so crucial to the health of the Ontario/Canadian economy that inflationary feedback considerations cannot be disregarded in the determination of Hydro's net income and rate increase proposals. Indeed, the Board considers the fight against inflation to be of such paramount importance that Hydro in its own interest, as well as Ontario's, ought to champion the taming of inflation. In the circumstances of this case, in the Board's view, Hydro should be striving for meaningful reduction in real rates in 1984 by cost avoidance, improving net income in 1983, and, if need be, by lower net income in 1984 than that recommended earlier herein.

RATES

Introduction

In 1979, in response to the letter of reference in H.R. 5, the Board reported upon the principles of electricity costing and pricing appropriate for use by Hydro.

After reviewing this report, Hydro did not adopt all of the Board's recommendations but proceeded to develop a framework, consistent with the main principles in the report, within which to develop a set of illustrative rates.

Customers' exposure to these rates revealed significant concerns which lead to formation of an ad hoc committee of customers' associations to interface with Hydro in developing costs and pricing proposals. After approval by Hydro's Board of Directors, the proposals were provided to bulk power customers and formed the basis of Hydro's proposed rates for 1983.

The Board recommended approval of Hydro's proposal to introduce seasonally differentiated rates in 1983 but Hydro deferred implementation because of perceived unacceptability by its customers.

In its proposal for 1984 rates Hydro has included diurnal differentiation but not seasonal differentiation. The issues which arose from the modified proposal are dealt with in the following sections.

Composite Peaking Plant Method

Hydro's rate proposal for 1983 included the use of the composite peaking plant method ("CPP") in the determination of the proportions of generating plant costs to be treated as capacity related and energy related. The Board recommended approval of this method for the purposes of 1983 rates but its use was deferred for other reasons.

Hydro again proposed the use of the CPP in the 1984 rate submission but found, as it had anticipated in H.R. 11 that an adjustment was necessary to constrain the effect of the west system plants from dominating the outcome. The proposed adjustment would reduce the effect of the peaking plants of the west system by the ratio of the west system peak to the total system peak, to one-twentieth of what it would have been.

In view of the Minister's reference, Board Counsel accepted this proposal, for the purpose of 1984 rates, but submitted that the criticisms expressed by Board Counsel in H.R. 11 still apply.

AMPCO contended that the CPP will contribute to rate instability; that it has been radically revised to preserve its emphasis on energy; that the west system adjustment to the CPP is further evidence that the methodology is arbitrary and manipulative and that more modifications to the CPP may be necessitated by mothballing or retirement of fossil-fired stations.

Mr. Genest noted OMEA's support for the west system limit and dismissed AMPCO's criticism as unwarranted and biased. He contended that the west system limit as applied to 1984 rates is consistent with both Hydro's intent in H.R. 11 and its cost tracking objective and yields a reasonable allocation of the total plant costs in the west system between capacity and energy.

The Board is concerned that the CPP as modified almost totally disregards the west system peaking plants and without major arbitrary adjustments may as AMPCO submitted contribute instability to the rate setting process. Indeed it would appear that the proposed modification to the CPP in the circumstances of this case would in effect invert the demand/energy ratio.

The Board notes that the cost allocation process proceeds from a basic assumption that all generation and transmission facilities serve all customers and views the proposed virtual exclusion of some generating plants from cost effect considerations as fundamentally inconsistent.

The Board therefore sees the need to review the appropriateness of the modified CPP and recommends this be done as a prerequisite to the acceptance of any rates based on its use.

Diurnal Differentiation

Both the Board and the Royal Commission on Electric Power Planning recommended that the introduction of diurnal

differentiation follow or be coupled with the seasonal differentiation of rates. Last year Hydro proposed to introduce seasonal rates in 1983 and then diurnally differentiate them in 1984, and the Board recommended approval. Hydro, however, was subsequently requested by the Ontario government to defer the implementation of seasonal rates in 1983. It has now proposed to introduce diurnally differentiated rates in 1984 without seasonal differentiation, contending that there is no tie between seasonal and diurnal differentiation; that these features can be introduced independently of one another, and that the selection of one or the other or both is only a matter of implementation strategy.

While Board Counsel did not oppose diurnal differentiation commencing in 1984, he expressed concern that, while the diurnal feature would provide some price signals to municipal utilities that may persuade them to promote efficient use of resources, the impact of the price signal at the end use level is likely to be severely limited by lack of appropriate metering and load control facilities.

AMPCO objected strenuously to the use of the modified CPP and the consequent impact of Hydro's proposed diurnal rates on its customers. AMPCO proposed an alternative rate structure and contended that Hydro had not established customer acceptability for its proposal.

Energy Probe urged the Board not to recommend diurnally differentiated rates without seasonal differentiation.

OMEA expressed deep concern as to the fairness and acceptability of the introduction of diurnal rates in advance of seasonal rates. It recommended that seasonal rates should be implemented together with diurnal rates and that the proposed introduction of diurnal rates be deferred until both features can be introduced concurrently. OMEA emphasized its position by stating that its Board of Directors:

> ". . . representing approximately 95 percent of the municipal utilities of Ontario specifically considered the issue of time of use rates, and concluded that time of day rates and seasonal rates go hand in hand and that the implementation of one without implementation of the other is unacceptable to the vast majority of the members of the OMEA."

Hydro's Counsel contended that there is no theoretical reason not to have diurnally differentiated rates in the absence of seasonal rates and that the rates proposed for 1984 constitute a major step towards a more equitable costing and pricing system. Noting that it "has taken us almost a decade to get to the point where we are", he said that to drop both seasonal and diurnal rates would move even further from the cost tracking objective and result in customer impacts being increased over those in the rate proposal.

While the Board is reluctant to delay the movement of rates towards the cost tracking objective, it considers that the issue of customer acceptability to be so important that it is inopportune to proceed to diurnal differentiation of

rates as proposed in 1984. The Board therefore recommends deferral of diurnal differentiation and its introduction together with seasonal differentiation.

Seasonal Differentiation

Although the Board recommended acceptance of Hydro's proposed introduction of seasonally differentiated rates in 1983, Hydro deferred implementation for further study. In its 1984 proposal it eliminated this feature because of the perceived opposition of northern customers to its impact and the introductory cash flow problems of municipal utilities.

The Board notes that Hydro still considers seasonal differentiation to be a soundly supportable move towards its cost tracking objective. Hydro is convinced that seasonal rates do not result in customer discrimination and is working with some success on studies to dispel the perception that they do. Hydro accepts that the cash flow problem can be overcome by introducing seasonal rates in the spring season.

Board Counsel, Counsel for OMEA and Energy Probe supported introduction of seasonal rates, preferably accompanied by or followed by diurnal differentiation. No other counsel commented on seasonally differentiated rates.

Inspite of the fact that this aspect of rates was not a part of Hydro's 1984 proposal, the Board reaffirms its view that seasonal differentiation is a highly desirable and fully warranted step towards the objective of reflecting

cost causality in rates in a non-discriminatory manner. The Board recommends that Hydro strive to bring seasonal rates into effect in 1985, together with diurnal differentiation to offset and minimize the introductory impact. Furthermore, it recommends that both features be phased in to assist customers to accommodate to them.

Finally the Board recommends that Hydro should give early notice under its voluntary commitment to two year's lead time in anticipation of early reintroduction of seasonal differentiation.

Customer Classification

In H.R. 5 the Board, recognizing the inseparable nature of customer classes and load diversity recommended

> ". . . a single customer class be adopted at the bulk power level consisting of the municipal utilities, the present direct industrial customers of Ontario Hydro, and the rural retail system as one customer."

For the next few years changes in costing principles including changes in customer classification were proscribed by the reference letter.

In H.R. 11 the ban was lifted but Hydro proposed to continue its single class of distribution customers, comprised of each of the municipal utilities together with the power district as a notional distributor within Hydro serving the direct industrial customers as well as a single notional customer comprised of all rural customers.

The Board in H.R. 11 recommended acceptance of the customer classification proposed by Hydro for the purposes of the 1963 rate design only. In that hearing Hydro undertook to study the issue and OMEA and AMPCO both agreed to participate as Hydro indicated that the proposed customer classification did not represent its final position in the matter.

Hydro indicated that the study could not be done in time for inclusion in its 1984 rates proposal and in this hearing, continued to base its proposed rates on the existing customer classification. Hydro confirmed its commitment to complete the study with customer participation in time for inclusion in its 1985 rates proposal.

In the Board's opinion, the reclassification of customers is overdue and protracted study serves to prolong the perceived inequity in the sharing of diversity benefits resulting from the present classification and underlying coincidence assumptions. The Board therefore recommends that Hydro ensure that the study of customer classification and diversity benefits is completed and included in its proposal of rates for 1985 as it has undertaken to do.

Capacity to Energy Transfer (Bary Correction)

Board Counsel recommended that the transfer of some $30.8 million from capacity cost to energy cost in establishing rates for direct industrial customers should be

rejected as inappropriate because it runs counter to cost casualty, the CPP philosophy, demand discouragement and the off-peak excess demand charge.

Hydro's Counsel submitted that this transfer, known as the Bary Correction, is a rate-making tool of many years standing and is used to improve cost tracking in the distribution of diversity benefits to direct industrial customers. It is not comparable to the CPP, and the increased energy revenue is caused by the CPP rather than the Bary Correction.

The Bary Correction recognizes the positive correlation between load factors and coincidence factors and increases the benefit to the lower load factor customers for their apparently greater contribution to diversity. While it appears similar to the CPP in its transfer of capacity to energy cost, it seems to the Board to be fundamentally different functionally and so not comparable.

In view of the long established use of the Bary Correction the Board is not prepared on the basis of the evidence in this hearing, to recommend withholding its approval for the purpose of rate setting for 1984. The Board is concerned however, with the long-standing perception of inequity in the distribution of diversity benefits in general, which are related to customer classification. Consequently, the Board considers that it would be opportune in conjunction with the review of customer classification

scheduled for next year's hearing to review the sharing of diversity benefits in general and the Bary Correction in particular, and recommends that this be done.

AMPCO's Rate Proposal

Messrs. Leighton and Kidd presented on behalf of AMPCO an alternative rate design intended to have a neutral impact on a customer with "normal" consumption characteristics and to provide an energy price differential smaller than Hydro's. The rate would keep the direct customer class demand/energy ratio essentially as is. They also offered a rate version intended to assist low load factor customers.

Counsel for Hydro submitted that AMPCO's proposed rate is not cost based, contrary to the cost tracking objective accepted by the Board and that the range of impacts for AMPCO's proposal exceeds that for Hydro's proposal. As well, Mr. Genest pointed out that these results were not discussed with individual AMPCO members to ascertain their acceptability, so there is no support for AMPCO's contention that its rate proposal is preferred by Hydro's direct industrial customers.

Board Counsel submitted that although the concept of AMPCO's particular rate form was unique and interesting, it would be inappropriate for the Board to adopt it as the basis for its recommendation in this hearing because the principles on which the rate is based are significantly at variance with those that have been accepted by the Board.

As well, Mr. Armstrong argued that it was presented late in the proceeding and none of the AMPCO members or indeed any of the other members of the direct industrial class were specifically aware of the proposal. Therefore, he said the Board is not able to assess the public acceptability of the rate.

OMEA considered the AMPCO rate proposal novel and interesting, but recommended its rejection because it does not track costs and because of the uncertainty of customer acceptance. Noting that its approval may preclude the implementation of the very customer classification recommended by this Board, OMEA submitted that customer classification must be resolved before any changes in rates for different customer groups are considered.

Energy Probe submitted that it is in principle preferable to set rates by rate structure rather than by customer class which treats different categories in a different manner. It considered that the AMPCO proposal while offering a useful analytic tool in the form of a concentration factor, would entrench the direct customer class and would defeat the flexibility of Hydro and of this Board in future discussions of customer class allocation.

Mr. Davies submitted that compliance with cost causality must be tempered with considerations of customer acceptability and that fixed variance costing is compatible with accounting costing. He pointed out that AMPCO's proposal complies with the principles set forth in H.R. 5,

that the Minister directed that the issues be re-examined in this hearing and that AMPCO was not alone in re-opening the issues. Intervenors preparing technical evidence he argued, are at a severe disadvantage because of the timing of the hearings and that AMPCO's proposal deserves to be considered on its merits rather than dismissed arbitrarily because of alleged failure to comply with earlier decisions.

In the Board's opinion AMPCO's rate proposal is not without merit but it lacks convincing proof of broadly based customer acceptance both within and beyond the direct industrial customer class. Furthermore, the Board considers that acceptance of a rate proposal at this time addressed and applicable only to the direct industrial customers might prejudice or preclude consideration of customer reclassification under study by Hydro and its customers' associations. The Board therefore recommends rejection of AMPCO's rate proposal.

Grid Costing

Hydro treats one percent of the cost of the high voltage transmission grid as being energy related.

In the Board's view the basic purpose of the grid is to convey electrical energy from the generating stations to the load centres with tolerable loss of such energy and consequently a substantially greater portion of grid costs could justifiably be considered to be energy related. Hydro agreed that such a view was supportable.

Hydro treats the step-up transformers as part of the generating stations because of their location at the generating stations and includes their costs in generation costs rather than in grid costs. In the Board's opinion, despite their proximity to the generators to minimize line losses, step-up transformers function as essential parts of the grid as do the step-down transformers at the load centres and so the costs of both should be classified as grid costs.

The Board recommends therefore that Hydro review the boundary between the generation and transmission functions as well as the proportion of grid costs that should be treated as energy related.

Off-Peak Excess Demand Charge

Hydro proposed inclusion in rates for both municipal utilities and direct industrial customers, a charge for the excess of the demand in the off-peak period over the demand in the on-peak period to ensure full recovery of non-common costs from customers whose peak demand might occur in the off-peak period.

Board Counsel recommended that this charge be dropped from the rate schedule because the revenue from the charge was insignificant, Hydro was fully recovering the non-common costs and it was premature to consider such charge until the system peak demand on non-common facilities occurs in the off-peak period. As well, he considered that

customers contributing diversity should not be penalized and the probability of municipal utilities peaking in the off-peak period is negligible.

Hydro's Counsel replied that although the revenue from the off-peak excess demand charge would be insignificant, customers shifting loads to off-peak periods should continue to pay an appropriate share of non-common costs which are not time sensitive. He said the off-peak excess demand charge was included in the 1983 rate proposal and accepted by the Board and urged its retention in 1984 rate schedules.

Hydro's proposed treatment of the recovery of non-common costs appears to be more like a facilities charge or minimum charge than a demand charge. In the Board's view, capacity costs are time sensitive whether they be common or non-common and so their different treatment is unwarranted. The Board therefore recommends against inclusion of an off-peak excess demand charge in the rate schedules.

Demand Interval

Furnace rates, which were to have been phased out at the end of 1982, were retained by Hydro in 1983 in response to the government's request that rates and charges for 1983 be based on current policies and practices. Furnace rates are now scheduled for extinction at the end of 1983. In 1984, electric furnace customers will be the main beneficiaries of the proposed extension of the demand interval from 15 minutes to one hour.

AMPCO suggested that Hydro study and consider in the interest of simplicity, understandability and acceptability the merits of using discrete billing demand intervals which change each hour instead of the overlapping billing demand intervals which shift every 15 minutes as proposed by Hydro.

Hydro considered that overlapping measurement intervals were no more difficult to implement or understand than discrete intervals and that it had only one customer query in this respect. Hydro favoured the overlapping interval measurement because it lessened the risk of peak-splitting by customers.

While Hydro has not estimated the revenue consequences of the difference in measurement, it seems obvious that the longer the demand interval and the less the overlap between successive measurements, the less the measured peak demand is likely to be. As adoption of a measurement method that would reduce the billing demand for all customers would be offset by higher rates, there would appear to be no overall advantage, but some customers might benefit at the expense of others. This of course, is why the demand interval was extended in the first place. From that viewpoint the Board is satisfied that the extended demand interval measurement as proposed by Hydro serves its intended purpose adequately and that there is little if any merit in AMPCO's suggestion. The Board therefore recommends that it be rejected.

Interruptible Rates

In response to the government's request that Hydro implement rates and charges for 1983 which are based on current policies and practices, Hydro has retained Interruptible A and Interruptible B rates in 1983 with discounts of 85¢/kW and $1.19/kW respectively.

Hydro had proposed to eliminate the Interruptible B rate in 1983 and replace the Interruptible A rate with a Capacity Interruptible rate having both a discount and a rebate for interruption. Hydro again proposed to implement those changes in 1984, except for deferral of the rebate feature as recommended by the Board in H.R. 11.

Hydro proposed to smooth the change by retaining the 85¢/kW discount in 1984, in view of calculated values of 81¢/kW for 1984 and 90¢/kW for 1985.

OMEA objected, upon learning that Hydro intends to change the discount to 90¢/kW in 1985, and submitted that the discount should be 85¢/kW in both 1984 and 1985 or be 81¢/kW in 1984, if it is to be 90¢/kW in 1985.

The Board concurs with OMEA and recommends that the discount be the calculated amount of 81¢/kW in 1984.

Distributing Companies

Board Counsel noted that the two distributing companies, that generate some of their own power and supplement it with purchases from Hydro, contribute $1.5 million more revenue than cost to the system. This results from the

fact that they are billed at municipal rates but are allocated costs as direct industrial customers. Mr. Armstrong recommended they continue to be billed at the municipal rate but that costs should be allocated to them as municipal utilities.

Mr. Genest replied that because the municipal utilities are supplied under statutory contracts and certain policies and practices apply to them which do not apply to other customers, it is preferable to keep the municipal utilities as a separate category and exclude the distributing companies.

He said that while the distributing companies are grouped with the direct industrial class within the power district for purposes of cost allocation and rate setting, they are treated essentially as though they were grouped with the municipal utilities by use of a credit adjustment afterward.

The Board notes that the rates to each distributing company are based on the unit costs applicable to municipal utilities under corresponding conditions of supply but with provision for their own supplemental generation. The Board however, considers that the distributing companies are more akin to municipal utilities than to direct industrials, and so it would be more sensible and straight forward for them to be included at the outset with the municipal utilities for cost allocation purposes, which the Board recommends, rather than resort to a sundry adjustment afterwards to reallocate costs properly.

Impact Relief

Hydro proposed to provide relief to any direct industrial customer for any excess in its rate increase beyond two percentage points more than the average increase of 9.7 percent to the class, with the cost of the relief charged back to the class.

Board Counsel submitted that if Hydro were to adopt a rate design for the direct industrial customers that did not incorporate the transfer of $30.8 million of capacity charges to energy, the impact of the proposed increases would be reduced and the need for impact relief would be diminished. He recommended therefore that Hydro's proposal for impact relief be rejected.

Energy Probe considered the impact relief to be cross-subsidization which would prolong the inequity the rate change was intended to relieve.

OMEA noted that, while Hydro in H.R. 11 had stated in effect that relief from unequal impacts of rate changes should not be addressed through rate making but rather by government as a matter of social policy, Hydro had in fact proposed relief for municipal utilities then in much the same manner as it now proposes for direct industrials. OMEA had no objection to impact relief provided that its cost is recovered from the customer group it benefits.

AMPCO faulted the impact study as confusing and the impact relief as temporary cross-subsidization. It proposed an alternative rate design discussed elsewhere herein, that would lessen the impact on the direct industrial customers.

Mr. Genest said Hydro's preliminary investigation indicates that there is considerable doubt as to whether elimination of the $30.8 million transfer would provide suitable impact relief. He stated Hydro's position was that impact relief should be visibly discernible and not concealed in the rate form as suggested by both Board Counsel and AMPCO.

The Board notes that the thrust of the impact varies with the underlying nature of the rate change and that the apparent segregation of the relief to one customer category is due to the extent of the relief proposed. More extensive relief would involve both customer categories and it appears to the Board that if there is merit in impact relief as proposed by Hydro, it would be fairer to assess the cost of such relief to all customers.

While Hydro's proposed impact relief appears to the Board to provide a phase-in of the changed rate rather than cross-subsidization, it spreads the cost of the relief equally and so inequitably. A fairer and more straight forward method, which is recommended by the Board, would be to phase-in the underlying change in the rate design and thus obviate the need for separate impact relief.

Cost Allocation Review

Board Counsel submitted that, while Hydro for the first time has filed a coherent and readily understandable cost of service study which has removed the complexity that was

associated with the analysis filed in H.R. 11, much of the earlier detailed criticism still applies.

In view of the Minister's reference Mr. Armstrong confined his review to the modifications of the policies and practices respecting costing and rate making employed by Hydro in its 1983 proposal. He therefore accepted Hydro's methodology for the purposes of 1984 rates as he considered it inappropriate to challenge the techniques used by Hydro in H.R. 11.

He submitted however, that as next year Hydro will be completing and presumably filing for review with this Board the results of their transformation study which essentially addresses the functionalization stage of the cost allocation process, it would seem appropriate that the Board should urge the Minister to include in next year's reference a provision for the timely review of the cost allocation methodologies inherent in the classification, assignment and allocation stages of the cost of service analysis.

OMEA supported Hydro's proposal to continue cost pooling of certain distribution stations rather than the specific cost allocation proposed in the 1983 submission pending the completion of a study of the allocation of transformation and line costs and a review of the findings by this Board in 1984.

Mr. Genest pointed out that the various techniques used by Hydro in its rate proposal last year were reviewed and approved by the Board and strongly submitted that there was

absolutely no need for such a reference from the Minister. He noted that a further review would be repetitive and create needless uncertainty for Hydro's customers if each year's proposal was implemented and subsequently reopened for review.

The Board in its H.R. 11 report expressed reservations in respect to much of Hydro's methodology and indicated its concerns by recommending acceptance for the purpose of 1983 rates only.

In this report the Board has recommended review, deferral or rejection of many aspects of Hydro's methodology. If these recommendations are followed, the rates for 1984 will be based on methodology essentially the same as employed in previous years. In such circumstances it is the opinion of the Board that confining the review of Hydro's proposal for 1985 rates to modifications to its methodology from that proposed but not implemented in the two previous years, would serve no useful purpose and would unduly hamper the review process.

The Board therefore recommends that methodology proposed and recommended for approval but not implemented should not be excluded from reconsideration in the review of a subsequent rate proposal.

Blended and Intermittent Rates

Hydro proposed two new experimental rates to address the prospect of excess base load capacity over future years.

Hydro described the proposed rates as follows:

"Intermittent power is a class of power made available only at times when additional consumption can be provided from low-cost nuclear or hydraulic sources. Notification of availability could be as short as one hour. The number of hours of availability for 1984 is 500 and only energy above the customer's normal use will qualify for the intermittent rate. Customers must contract for a minimum of 5000 kW of intermittent power. This class of power is being made available in 1984 to test the marketability of the concept prior to 1985 when it is forecast that more significant amounts of low incremental production cost generation will be available on the system. Power agreements for intermittent power will be for an initial term of one year, and renewable on a year-to-year basis.

Blended power is a class of power available on a continuous basis for eight months of the year, April to November inclusive. This period includes hours when surplus nuclear or hydraulic generation is forecast to be available. In order to provide continuity of service for the scheduled period, the supply to this class of power will include fossil-fuelled generation. This class will initially be restricted to customers that have an alternate fuel source and use the alternate source December to March. As customers may have to purchase equipment to take advantage of these rates, power agreements for blended power will have an initial term of five years, and a minimum contract amount of 1000 kW of blended power.

Revenue from the new classes of power will cover forecast incremental production costs over the applicable periods for the respective classes, plus a margin to allow for risk and a contribution toward recovery of fixed costs. Intermittent and blended power rates will be set so as to ensure that, over time, firm power customers will also benefit from these new classes of power through lower firm rates.

Both intermittent and blended power are only available from existing supply facilities and the latter must be separately metered at the customer's expense. Both classes of power will be made available in 1984 to large-use customers (greater than 5000 kW demand) of municipal utilities, subject to the agreement of the utility.

> Pending further study, blended power may be extended to rural and municipal utility customers with loads as low as 1000 kW. A limit will be established on the total amount of intermittent and blended power which Ontario Hydro will contract to sell."

While Hydro has not included any sales from these rates in its 1984 rates proposal it has set a limit of 60MW for contracted sales of blended power in 1984. It calculated that, if fully contracted at 80 percent of firm rates, on the basis of 80 percent diversity and 70 percent load factor and $19.61/MW.h average system incremental cost from April through November, the rates would result in $4 million of production costs and some $5 million of revenue.

The same limit of 60 MW was set for intermittent power which was expected to produce revenue of $250,000 in 1984 at a cost of $135,000.

AMPCO supported Hydro's emphasis on marketing and considered that the blended and intermittent rates open up new markets, but that such new sales must carry some portion of Hydro's fixed costs in order to moderate rates to all customers.

ONGA noted the uncertainties of marketing and pricing and the potential for discrimination and submitted that the Board recommend against the introduction of the proposed power classes even on an experimental basis, until Hydro has fully examined and explained the proposals' implications. In the alternative ONGA submitted that the Board recommend the introduction of the proposed power classes be deferred until such time as an inquiry is held into Hydro's system expansion program and the impact of that program on rates.

OMEA recommended that the rates ought to go forward on a trial basis in spite of the lack of separate metering to ensure no loss of firm load as a result of the new rates.

Energy Probe took both experimental rates to be a form of marginal cost pricing that offends the costing and pricing principles and viewed the fuel switching prerequisite of the blended rate as discriminatory in its effect upon new and existing customers. Considering these aspects together with the small margins, uncertain pricing and risk of higher costs, Energy Probe submitted that the experimental rates should not be recommended.

Board Counsel submitted that the blended rate violates the principles of rate making accepted by the Board in H.R. 5 and listed ten reasons for rejecting it:

"1. At the present time, the price is above the market price of other fuels.

2. The rate carries with it an investment which in turn carries with it a high return risk.

3. To make the rate competitive would require increasing the proportions of nuclear generation which can be accomplished by shortening the period in which the rate is offered.

4. Shortening the period increases the risk associated with earning return on the investment required.

5. The rate is experimental and unstable which increases the risk of earning the return required on the investment.

6. To make the rate attractive would require the proportion of nuclear generation to be so large that a cross subsidization from the firm customer to the blended customer results, making the rate unfair and discriminatory.

7. In the event that seasonal rates are reconsidered or introduced, the need for blended rates would be eliminated.

8. The only type of customer who could possibly benefit from the blended rate is one that generates electricity from fossil fuels.

9. If the experiment is judged to be a failure, the customer bears the risk and the cost of the investment required to benefit from the rate.

10. The rates are temporary and Hydro has indicated that they will alternately be phased out."

He said the intermittent rate is fraught with similar difficulties, that the availability of the rate on a year-to-year basis limits the expenditure warranted on metering facilities and after such investment the cost saving will be random and relatively small.

Board Counsel submitted that neither rate will make any contribution to alleviating the excess base load capacity and in view of their many flaws he recommended their rejection.

Hydro's Counsel likened Hydro's intermittent rate to the spill rate, used by one U.S. utility, which is offered when there is spare turbine capacity for the unstorable water flow but insufficient demand at regular prices.

He submitted that the intermittent rates would reduce the risk of relying too heavily on a volatile export market.

The blended rate has been explained as including coal-fired energy in a package to help sell excess base load capacity. However, with a preponderance of coal-fired

energy in the blend, it appears instead to the Board that nuclear energy is to be used to help sell coal-fired energy. This viewpoint in the Board's opinion makes the blended rate of questionable merit.

Hydro expressed concern that the blended rate as proposed may not be competitively priced and since the hearing, the public announcement of an agreement by Alberta and Canada to hold the price of oil and gas to current levels through 1984, only serves in the Board's view, to aggravate the competitive situation and underline Hydro's concern.

While the intermittent rate has an initial term of one year and is renewable on a year-to-year basis and may be considered by Hydro as experimental, in the opinion of the Board, the initial five-year contract term takes blended power out of the experimental category. Once introduced it appears that it would take at least five-years to phase out the blended rate.

The blended rate can be viewed as a form of seasonal rate. Hydro accepts that when seasonal rates are reintroduced they will supplant the blended rate. Earlier herein the Board has recommended that Hydro introduce seasonal rates in 1985. As the consequential phase out of the blended rate only one year after its introduction would be inconsistent with its five-year contractual commitment, and in view of the other concerns expressed, the Board recommends that the blended rate not be introduced.

The Board recommends, however, that the intermittent rate as proposed be approved on an experimental basis subject to annual review. Intermittent power should be made available to all bulk power customers, and separate metering or certain means should be employed to ensure that there is no conversion of firm power to intermittent power.

COSTS

Mr. Poch requested the Board to award costs to his client Energy Probe.

Board Counsel and Hydro's Counsel submitted that the costs should not be awarded and cited previous Board comments in support of this conclusion.

The Board denies Mr. Poch's request. Funding of public interest groups which participate in public hearings of this nature is a matter of determination by broad government policy and the Board does not feel that participation in this hearing warrants any special consideration for costs.

However, the usual order will be made charging the costs of the Board to Ontario Hydro.

OPINIONS OF THE BOARD

In accordance with the Minister's instructions in the letter of reference, the Board has listed its recommendations in regard to the revenue requirement below. The effect of this reduction in revenue requirement is to increase borrowing requirements and thereby incur interest costs of $5 million.

Recommendations Relating to the 1984 Rate Proposal

Page No.		Increase (Decrease) in Revenue Requirement
		$millions
12	Hydro's forecast of the Canadian inflation rate be adjusted and its revised forecast of U.S. inflation rate be accepted	(24)
14	Hydro's forecast of interest rates be adjusted	(11)
18	Hydro's forecast of the Canadian dollar be adjusted	21
26	Hydro's load forecast be adjusted	(15)
34	Hydro's revised coal costs be accepted	38
34	Hydro's revised power purchase costs be accepted	(28)
40	Hydro's forecast of secondary sales be adjusted and the average price be adjusted	nil
49	Hydro's electrical capacity factor for Bruce A be adjusted	(5)

Page No.		Increase (Decrease) in Revenue Requirement
		$millions
51	Hydro's revised charges for the nuclear payback be accepted	4
54	Hydro's forecast nuclear in-service dates be delayed	(11)
59	Hydro's revised productivity cuts be accepted	(5)
61	Hydro's forecast OM&A costs be adjusted	(17)
66	Hydro's revised pension fund liability be accepted	3
80	Hydro's forecast of revised training costs be adjusted	8
81	Hydro's accounting policy for the capitalization of training costs be altered	1
83	Hydro's revised interest expense be accepted	(35)
83	Hydro's revised decommissioning charges be accepted	2
88	Hydro's accounting treatment for BHWP A be altered	7
104	Hydro's requested net income be adjusted to no more than $350 million	(54)
143	Hydro's interest costs be adjusted	5
	TOTAL	(116)

The effect of this total downward adjustment in revenue requirement of $116 million would be to lower Hydro's proposed average rate increase from 9.7 percent to 6.3 percent.

Page No.

Cost Allocation and Rate Design

115 That the appropriateness of the modified CPP be reviewed as a pre-requisite to the acceptance of any rates based on its use.

119 That Hydro strive to bring seasonal rates into effect in 1985, together with diurnal differentiation and that early notice should be given of this intention.

120 That Hydro ensure that the study of customer classification and diversity benefits is completed and included in its 1985 rate proposal.

122 That Hydro review the sharing of diversity benefits in general and the Bary Correction in particular.

125 That Hydro review the boundary between the generation and transmission functions as well as the proportion of grid costs that should be treated as energy related.

126 That an off-peak excess demand charge should not be included in the rate schedules.

127 That the extended demand interval measurement as proposed by Hydro be accepted.

128 That the interruptible rate discount be adjusted to 81¢ per kW for 1984.

129 That the distributing companies be included with the municipal utilities for cost allocation purposes.

131 That the proposal for impact relief for the direct industrial customers be rejected and the new rate be phased in.

133 That cost allocation methodology proposed and recommended but not implemented should not be excluded from reconsideration in the review of a subsequent rate proposal.

138 That the blended rate proposed by Hydro be rejected.

139 That the intermittent rate as proposed be approved on an experimental basis subject to annual review.

139 That intermittent power should be made available to all bulk power customers and that separate metering or other certain means should be employed to ensure that there is no conversion of firm power to intermittent power.

Page No.

Recommendations Relating to Future Hearings

22 That Hydro's proposal to alter the schedule for the preparation of load forecast for future hearings be accepted on a trial basis.

24 That the economic assumptions underlying the load forecasts, especially as to economic growth rates be explicitly stated.

32 That the operation of NPD should be continued and that the Board be informed of the negotiations with AECL at the next hearing respecting the cost of steam and OM&A costs.

36 That Hydro's present policy as to the pricing of power used internally is inconsistent with that used for steam and such inconsistency should be reviewed in next year's hearing.

50 Hydro should present an up-to-date review of its progress in obtaining permission for new transmission lines at Bruce in next years hearing.

51 The treatment of disallowed nuclear agreement payback costs be examined further in next year's hearing.

52 That Hydro submit a report at next year's hearing on the status of its cobalt negotiations with AECL.

55 That Hydro provide more detailed support for its methodology for forecasting hydraulic production at next year's hearing.

63 That the staff and compensation levels for non-regular staff be closely examined at next year's hearing.

64 That in future submissions, overtime costs be shown separately by branches as part of the general compensation information.

66 That the Atrium space should be vacated as soon as possible and that the Board should be informed of progress in this area.

73 External marketing advice should be sought by Hydro and presented in evidence, at least in a preliminary fashion, in next year's hearing.

Page No.	
81	Evidence on the magnitude of training costs to be capitalized be filed at next year's hearing.
85	That Hydro prepare a list of consistently delinquent municipalities for introduction at next year's hearing, if requested by the Board to do so.
88	That Hydro be prepared to review its accounting policies, practices and procedures in respect of heavy water in next year's hearing.
89	That Hydro present a thorough review of Lennox for presentation at the next hearing which should include a study of its potential usefulness in the 1990s, the cost to decommission and a proposal to accelerate its write-off.
93	That Hydro produce at next year's hearing a comparison of its capital budgeting and cost control process with that followed by comparable U.S. utilities, including the material filed with those utilities' regulatory boards in regard to this subject.
106	That Hydro in next year's hearing address the issue as to whether the accumulated provision accounts should continue to be treated as debt in computing the debt ratio.

Other Matters

79	That Hydro reconsider policies with respect to exchange gains or losses resulting from premature retirement of debt;
81	That Hydro reconsider policies with respect to specialized training costs;

Comments for Consideration of the Minister

85	That Hydro seek an amendment to the Power Corporation Act to allow it to charge an appropriate rate of interest on its overdue accounts.

This is APPENDIX A to the Report to the Minister of Energy of the Ontario Energy Board on Ontario Hydro Bulk Power Rates for 1984 dated August 31, 1983.

Ontario H
700 University
Toronto,
M

Appendix 'A'

Office of the Ch

April 11, 1983

The Honourable Robert Welch, Q.C.
Minister of Energy
Room 180
Legislative Building
Queen's Park
TORONTO, Ontario

Dear Minister:

In accordance with section 37 of the Ontario Energy Board Act, Ontario Hydro hereby submits to you its proposal to change electricity rates to its municipal utility and direct customers, effective January 1, 1984.

The proposed rate increase for municipal utilities averages 9.7 per cent. The effects of the increase will vary among the 321 municipal utilities according to individual utility monthly peaks, energy consumption, and service conditions. No municipal utility is expected to have a rate increase exceeding 10.9 per cent.

The proposed increase in wholesale rates for the municipal utilities will probably result in the majority of them increasing the retail rates charged to their customers during 1984. These increases will vary among utilities and will depend, in part, upon their need to cover increases in their own costs.

The proposed rate increase for direct customers averages 9.7 per cent. As is the case for municipal utilities, the effects of the increase will vary among the approximately 100 large industrial customers. It is planned that impact relief will be given to any direct customer whose rate increase is greater than two percentage points above the average percentage increase for the class, except for customers on the furnace rate in 1983.

The proposed rates are set out in the attached document entitled Proposed 1984 Wholesale Rates for Municipal Electric Utilities and Retail Rates for Direct Customers.

- 2 -

The average 'all customers' rate increase, which also covers Ontario Hydro's rural retail customers, is 9.8 percent. This increase is based upon a total revenue requirement for 1984 of $3767 million. This represents an increase of $461 million over the level expected in 1983. Of this increase, $124 million is expected to be derived from increased sales, leaving $337 million to be recovered through increased rates.

Major factors increasing the revenue requirements can be grouped into the following three general categories.

Load and System Growth ($506 million increase)

- Additional facilities in-service, particularly the nuclear units, have associated interest and depreciation costs of $518 million.
- Increased nuclear production reduces fuel costs by $129 million.
- Increased generation due to sales growth increases fuel costs by $102 million.
- Operation, maintenance and administration (OM&A) costs increase by $21 million mainly due to new facilities and increased generating station maintenance.

Economic Environment ($162 million increase)

- Escalation in the various components of OM&A adds $75 million to costs.
- Cost increases attributable to escalation in fuel and fuel-related items add $66 million.

Internal Factors ($207 million decrease)

- The interest savings through additional financing from internally generated funds reduce costs by $98 million.
- The change in the accounting practice for common facilities reduces interest and depreciation costs by $94 million.
- The change in accounting policy guidelines on project development costs and training costs reduces OM&A costs by $49 million.

- 3 -

- The change in the accounting policy for the translation of foreign currency increases foreign exchange costs by $36 million.

- Reductions to service lives of some fossil stations increase depreciation costs by $17 million.

- A lower level of planned net income reduces the revenue requirement by $37 million.

New costing and pricing policies and practices have been incorporated in the proposed rates for 1984. These policies and practices are basically the ones which were included last year in the submission on 1983 rates, generally accepted by the Ontario Energy Board, and deferred at the request of the Ontario Government. Some modifications have been introduced to reflect the OEB's recommendations, to enhance public acceptance and to take into account concerns expressed by the Government over economic impacts. The feature of seasonal differentiation of rates has not been included in the proposed rates for 1984.

Ontario Hydro's proposal for 1984 rates is put forward in an environment of economic recession unprecedented in the post-war era. The recession, coupled with circumstances particularly affecting Ontario Hydro, have combined to confront the Corporation with difficult challenges which it must struggle to surmount. These challenges include:

- rapidly rising operating costs substantially contributed to by the coming into service of major nuclear facilities, which were planned and committed when load growth was predicted to be much higher than now forecast

- lower than planned sales, caused by recessionary conditions affecting Hydro's customers

- the need for restraint in rate increases due to concerns about the impact of large rate increases on the Provincial economy

- 4 -

a considerable surplus of generating capacity in the near and medium term resulting from lower than forecast growth in customer loads.

As you know, in order to better enable it to surmount these challenges, Ontario Hydro announced in October of 1982 a new corporate strategy for the 1980s, which reflects a slow energy-growth environment. In order to reduce unit costs to customers, the strategy calls for the taking of a more active approach to the marketing of electricity, consistent with the wise use of electricity and the Canadian oil substitution program, with a view to increasing sales in both the Ontario and export markets. In addition, the strategy emphasizes increased productivity and cost control.

Ontario Hydro has already taken major steps consistent with this new strategy, towards becoming a leaner, scaled-down organization, and these steps have affected all areas of Hydro's operations. In construction, the capital program underwent a stringent review, with the result that some projects were rescheduled and others were reduced in scope. An example is the delay of in-service dates on two units at the Darlington plant. In terms of operation, maintenance and administration costs, Hydro has imposed hiring restrictions, cut back on overtime and travel expenses, sucessfully encouraged professional staff to participate in a program to reduce salary costs, and cancelled a scheduled salary increase for senior management staff. We have also substantially reduced target levels of inventories; mothballed the two remaining units at the Lennox station; suspended operations of a unit at Thunder Bay GS; decided to close our Niagara Regional Office; mothballed another unit at Hearn GS; and reduced our heavy water production.

All in all, our efforts are directed to the aim that over the decade of the 1980s, the increase in the price of electricity should not exceed general inflation.

Sincerely,

Milan Nastich

Milan Nastich

Attach.

Proposed 1984 Wholesale Rates
for Municipal Electric Utilities
and Retail Rates for Direct Customers

Municipal Electric Utilities
1984 Schedule of Monthly Billing Rates

	Approved for 1983	Proposed for 1984
Demand Charge ($/kW)*		
Over 50 kV	8.78	7.25
10 kV to 50 kV	9.28	7.98
Under 10 kV	9.87	8.76
Off-Peak Excess Demand Charge ($/kW)**		
10 kV to 50 kV	NA	.73
Under 10 kV	NA	1.51
Energy Charges (¢/kWh)		
Peak	1.43	2.33
Off-Peak	1.43	1.64
Ownership of Low Voltage Switchgear Credit ($/kW)***	0.07	0.12
Specific Facility Charge		
Lines ($/km)	-	288
(% of Capital)	1.75	-
Delayed Billing Factor	1.003	1.003

.* The demand charge for 1984 applies in the peak period from 7:00 a.m. to 11:00 p.m., Monday through Friday, except for public holidays as established from time to time.

** The off-peak excess demand charge applies in the off-peak period and to the amount by which peak demand in the off-peak period exceeds that of the peak period.

*** Applicable to peak demand and off-peak excess demand.

DIRECT CUSTOMER RATE SCHEDULE FOR 1984

1. MAIN CLASSIFICATIONS

Standard Rates:

(a) Demand Charges* - per kW of billing demand per month.

		Approved for 1983	Proposed for 1984
230 kV	- Firm	$6.53	$5.01
	- Interruptible **	5.68	4.16
115 kV	- Firm	6.66	5.14
	- Interruptible	5.81	4.29
10 to 50 kV	- Firm	7.07	5.72
	- Interruptible	6.22	4.87
Under 10 kV	- Firm	7.57	5.72
	- Interruptible	6.72	4.87
(b) Off-Peak Excess Demand Charge (Under 115 kV)***		--	.58
(c) Energy Charges - per kWh			
Peak		1.57¢	2.66¢
Off-Peak		1.57¢	1.64¢

2. SPECIAL CONDITIONS CLASSIFICATIONS

Blended Rates:

(a) Demand Charges* - per kW of billing demand per month

230 kV	--	$3.98
115 kV	--	4.11
Under 115 kV	--	4.69
(b) Energy Charges - per kWh		
Peak	--	2.13¢
Off-Peak	--	1.31¢

Intermittent Rates:

(a) Energy Charges - per kWh

Peak and Off-Peak	--	1.00¢

3. DISTRIBUTING COMPANIES	Approved for 1983	Proposed for 1984
(a) Demand Charges		
Gananoque Light & Power Ltd. - (44 kV)		
Firm - per kW per month*	$9.34	$7.98
Off-Peak Excess Demand Charge***	--	.73
Great Lakes Power Limited - (230 kV)		
Firm - per kW per month*	$8.69	$7.25
(b) Energy Charges - per kWh		
Peak	1.57¢	2.33¢
Off-Peak	1.57¢	1.64¢

4. AUXILIARY CLASSIFICATIONS

(a) Demand Charges - per kW per month	Approved for 1983	Proposed for 1984
Excess	125% of Firm Demand Charge	125% of Firm Demand Char
Short Term	125% of Firm Demand Charge	125% of Firm Demand Char
Supplemental	125% of Firm Demand Charge	125% of Firm Demand Char
Standby	100% of Firm Demand Charge	100% of Firm Demand Char

(b) Energy Charges - per kWh		
Peak	1.57¢	2.66¢
Off-Peak	1.57¢	1.64¢

Notes:

*Demand charges for 1984 apply in the peak period from 7:00 a.m. to 11:00 p.m. Monday through Friday, except for public holidays established from time to time.

**For 1983, only Interruptible A rates are shown for comparison purposes.

***The off-peak excess demand charge applies in the off-peak period and to the amount by which peak demand in the off-peak period exceeds that in the peak period.

For 1984, these rates are consolidated into an "Under 115 kV" rate.

RECEIVED
APR 13 1983
CHAIRMAN
ONTARIO ENERGY BOARD

Ontario

Energy Ontario

Minister

Ministry of Energy

Queen's Park
Toronto, Ontario
M7A 2B7
416/965-2041
Telex 06217880

April 13, 1983

Mr. Robert H. Clendining
Chairman
Ontario Energy Board
9th Floor
14 Carlton Street
Toronto, Ontario
M5B 1J2

Dear Mr. Chairman

Pursuant to Section 37 of the Ontario Energy Board Act, I hereby refer to the Ontario Energy Board for investigation, examination and report, the attached submission of Ontario Hydro to change, effective the first day of January 1984, the rates or charges including the impact of revisions to the policies and practices respecting power costing and rate making on its customers, as defined in the Act.

As part of the 1983 bulk power rate submission, Ontario Hydro proposed revisions to its electricity costing and pricing policies and practices. The Ontario Energy Board examined these proposed revisions and recommended in its report dated August 31, 1982 that they be implemented, with minor modifications, effective January 1, 1983.

On September 21, 1982 the Premier announced a comprehensive public sector restraint program. In view of the difficult economy and the Inflation Restraint Program, I wrote to the Chairman of Ontario Hydro on October 22, 1982, expressing the Government's concerns regarding implementation of the revised costing and pricing policies and practices:

> "... it is the desire of the Government that Ontario Hydro should defer the implementation and reconsider the economic impact of the new policies and practices respecting power costing and rate making proposed by Ontario Hydro, and implement rates and charges for 1983 which are based on current policies and practices respecting power costing and rate making."

Implementation of the revisions to costing and pricing policies and practices was deferred by the Ontario Hydro Board and the 1983 rate increase was applied to customers based on the existing costing and pricing policies and practices.

Ontario Hydro has reassessed the economic impacts of its costing and pricing revisions and has modified certain parts of its proposal. These revisions and resultant impacts of the revised proposal are included in its submission.

I am specifying the following terms of reference for the guidance of the Board:

A. The Board shall examine and report on the manner in which Ontario Hydro has determined its revenue requirement and the extent to which Ontario Hydro has kept its proposed revenue requirement allocated to the municipal utilities and direct customers for 1984 as low as feasible, consistent with the maintenance of its financial soundness, its ability to attract capital at favourable rates and the reliability and quality of its service to its customers.

B. In response to a recommendation of the Ontario Energy Board in its 1979 report on Ontario Hydro's bulk power rates for 1980, the Ministries of Treasury and Economics and Energy undertook to review the policies and processes relating to the assessment of Ontario Hydro's borrowing and net income. For the Board's guidance, a copy of the Treasurer's letter to the Chairman of Ontario Hydro is attached.

C. Ontario Hydro has proposed modifications to those policies and practices respecting power costing and rate making which were examined by the Board in its hearing on Ontario Hydro Bulk Power Rates for 1983; these modifications and the overall impact of the revised proposals on Ontario Hydro's customers should be investigated to determine whether the proposed modifications are reasonable and appropriate.

D. In connection with the revisions to the policies and practices respecting power costing and rate making, the principles do not require re-examination.

E. As in previous years, the system expansion program is excluded from this review.

I would appreciate the Board structuring its recommendations so that Ontario Hydro may act directly on the revenue requirement and the proposed rate levels, in accordance with its responsibilities under the Power Corporation Act and so that I may consider separately such other recommendations as the Board may make.

I look forward to receiving the Board's report.

Yours sincerely,

Robert Welch
Minister of Energy

Ontario

Office of the Treasurer of Ontario

Ministry of Treasury and Economics

Frost Building
Queen's Park
Toronto, Ontario
416/965-6381

March 11, 1983

Mr. Hugh Macaulay
Chairman
Ontario Hydro
700 University Avenue
Toronto, Ontario

Dear Mr. Macaulay :

As a result of a recommendation of the Ontario Energy Board (O.E.B.), the Ministries of Treasury and Economics and Energy have reviewed Hydro's policies and the policy framework surrounding the determination of the level of Hydro's borrowing and net income. This review was undertaken to identify the appropriate role of Government and to determine whether Government could better fulfill its responsibilities in this area.

We regard the amount of Hydro's borrowing as an important matter for Provincial finance policy. As you know, we normally address this issue by monitoring and reviewing, in cooperation with Ontario Hydro, Hydro's financing and borrowing plans, and taking action when these become inconsistent with general Government policy objectives.

While Ontario Hydro will no doubt have a number of objectives in evaluating a net income policy framework, from a public policy perspective there are three principles which I believe must be upheld :

1. Hydro's operations must support its debt; that is, Hydro must consistently earn sufficient net income to assure that its debt is self-supporting, given the presence of the Provincial guarantee but without direct Provincial financial support or subsidy.

2. The autonomy of the Ontario Hydro Board of Directors, as set forth in legislation and the recently signed memorandum of understanding, should not be compromised in any Government policy advice or direction on the net income question.

3. The O.E.B. review process is useful and productive, particularly in providing a forum for public participation. The precise level of net income which the O.E.B. recommends as an appropriate component of Ontario Hydro's revenue requirement should be determined by the O.E.B., generally without specific policy direction on this matter from the Government.

The priority which the Province places upon the maintenance of its prime credit status requires that Hydro continue to plan for, and achieve, financial results that do not prejudice Ontario's credit rating. As you well know, even the prospect that Hydro's operations were becoming incapable of supporting its debt could impair the Province's prime credit status. For this reason, I would be concerned if either Hydro's financial planning, or Ontario Energy Board recommendations, were to contemplate any trend toward a material deterioration in Hydro's debt to equity ratio or interest coverage performance.

Because the current policies and practices at Hydro and the O.E.B. have produced satisfactory results, and given our general desire to maintain the autonomy of Hydro's Board of Directors, I do not propose to significantly alter current policies regarding the determination of Hydro's net income and borrowing. In particular, I do not believe that it is appropriate for the Treasurer to endorse specific long-term or short-term financial targets for Ontario Hydro, a process which is better carried out by the Hydro Board of Directors, subject to O.E.B. review and public discussion in O.E.B. hearings.

As I have noted, the Government traditionally monitors Hydro's borrowing plans and consults with Hydro to ensure that Hydro's intentions are consistent with the maintenance of the Province's prime credit status and with general Government policy objectives. In the interest of clarifying for the O.E.B., on an on-going basis, the implications of Government finance policy for its deliberations, I believe that it is appropriate to continue and enhance this process of Government-Hydro consultation.

Yours truly,

Frank Miller
Treasurer of Ontario

cc : R Welch

This is APPENDIX B to the Report to the Minister of Energy of the Ontario Energy Board on Ontario Hydro Bulk Power Rates for 1984 dated August 31, 1983.

Appendix 'B'

List of Witnesses in Order of Appearances (by Sponsor)

		Title
ONTARIO HYDRO		
W. M. Van Veghel	-	Senior Economist Economics Division
M. P. Rothman	-	Chief Economist Economics Division
I. R. Russell	-	Manager Financial Planning Department Comptroller's Division
L. T. Higgins	-	Manager Load Forecasts
J. D. Smith	-	Manager Financial & Business Planning Fuels Division Supply & Services
A. R. Holt	-	Director Fuels Supply & Services Branch
W. H. Winter	-	Director Power System Operations Division
R. D. Nevison	-	Manager Operations Services and Foreign Projects
R. T. Popple	-	Assistant to the Director Nuclear Generation Division
G. F. McIntyre	-	Acting Director Corporate Power System Programming Division
J.A.J. Miller	-	Manager Heavy Water Utilization Department - Nuclear Generation Division
A. G. Brace	-	Branch Comptroller Design & Construction Branch
J. E. Seeton	-	Manager Program Budgets - Comptroller's Division - Finance Branch

F. R. Preston	-	Section Head Corporate Budgets Program Budgets Department Comptroller's Division
R. W. Bartholomew	-	Corporate Comptroller
A. Niitenberg	-	Executive Vice-President Planning & Administration
D. B. MacCarthy	-	Vice-President Marketing
J. G. Laschinger	-	Manager Power System Programming Power System Program Branch
J. E. Cook	-	Manager Short Term Investments - Treasury Division Finance Branch
F. P. Chee	-	Assistant Treasurer Corporate Treasury Division Finance Branch
R. A. Hornowski	-	Manager Accounting Services Department - Financial Information Systems Division Finance Branch
C. Alpay	-	Section Head Fixed Asset & Depreciation Accounting
B. L. Bennett	-	Manager Corporate Accounting & Financial Reporting
J. K. Snelson	-	Senior Planning Engineer Generation System Design System Planning Division
G. Morison	-	Director Design & Development Division
J. R. Furse	-	Partner National Accounting Standards Clarkson Gordon
R. J. Lawson	-	Manager Financial Policy Department Comptroller's Division Finance Branch

E. H. Burdette	-	Vice-President Finance
M. A. Kane	-	Section Head Financial Forecasts Comptroller's Division Finance Branch
J. S. Black III	-	Vice-President Canadian Corporate Finance Group Salomon Brothers Inc.
T. E. Kierans	-	President Director and Member of Executive Committee McLeod Young Weir Limited
D. A. Carmichael	-	Vice-President and Director McLeod Young Weir Limited
W. S. Taylor	-	Director Customer Service Division Marketing Branch
H. C. Palmer	-	Director Rates & Market Research Division Marketing Branch
S. L. Osler	-	Section Head Power Costing Comptroller's Division
B. A. Bellissimo	-	Acting Section Head Financial Forecasts Section Financial Planning Department Comptroller's Division
M. Nastich	-	President and Chairman
T. E. Falk	-	Supervising Engineer Utilization of Resources

ONTARIO ENERGY BOARD

L. de Bever	-	Director Chase Econometrics Canada
B. J. Thompson	-	Partner Price Waterhouse

AMPCO

W. J. Chambers	-	Vice-President and Director of Research - G. M. Stamm Economic Research Associates
K. H. Kidd	-	Partner Leighton and Kidd Ltd.
A.J.G. Leighton	-	President Leighton and Kidd Ltd.

SEAN CONWAY, MPP

M. Ridley	-	Reeve Township of Rolph Buchanan, Wylie, and McKay
L. Smith	-	Mayor Town of Deep River
G. Howey	-	Citizen Town of Deep River
G. Warner	-	Vice-President Deep River and Area Business Association

This is APPENDIX C to the Report to the Minister of Energy of the Ontario Energy Board on Ontario Hydro Bulk Power Rates for 1984 dated August 31, 1983.

Appendix 'C'

H.R. 12: "VIEWS OF THE PARTICIPANTS"

Introduction

The Act instructs the Board to Summarize "the information presented and the views expressed at the public hearing" in its report.

The submission of Hydro, the views of its witnesses and those of the intervenors are outlined in some detail in the body of this report, and all submissions were considered by the Board in reaching its conclusions. In response to the statutory direction the Board has, in this Appendix, summarized the submissions of the intervenors and Board Counsel which were presented at the conclusion of the hearing.

Views of Board Counsel

Mr. Armstrong said that the Board should apply the broad principles of public utility rate making which it had enunciated in past reports and that the recommended rates should be just and reasonable and not unduly discriminatory. The Board, he said, should look for consistency and equity in the development of the revenue requirement and should follow the guidelines in the Minister's letter of reference.

Board Counsel considered that Hydro's basic problem is a surplus of base load capacity for its immediate and

anticipated future needs, and he noted that the system base capacity could exceed 90 percent of the planning peak for ten of the next twenty years and 80 percent of the planning peak in every year after 1985. He summarized Hydro's corporate strategy to meet this challenge as:

> ". . . adapting to new and lower load growth, reducing construction activity, encouraging the cost effective use of electricity, and exploring the sale of ancillary products",

with an emphasis on cost control, productivity and rate innovations. Mr. Armstrong said the Board's task was to measure the effectiveness of this response to the excess base load capacity problem.

Economic Outlook

Mr. Armstrong submitted that the Board ought to adopt the economic forecast of Chase, rather than the forecast put forward by Hydro or AMPCO. He said that the Chase's forecast of economic growth presented a consensus of the views of the major forecasting agencies and that Hydro had made conclusions outside the range of forecasts of these groups. Mr. Armstrong said that Hydro's forecasts of GNP and Ontario's GPP were significantly below the growth rate assumptions of the major forecasting firms, and were unduly pessimistic. He also urged the acceptance of the Chase forecast of real rates of interest in 1984 contending that, if Hydro's real interest rate assumption of 5 to 5.5 percent materializes, it is extremely unlikely that Hydro's forecast of 3 percent real GNP growth could be achieved.

Mr. Armstrong submitted that applying the Chase forecast to Hydro's original 1984 revenue requirement proposal would result in a revenue reduction of $15 million.

Load Forecast

Board Counsel said that there was only an obscure link between Hydro's economic forecast and its load forecast and that, in his opinion, the Board would be assisted in the future if Hydro:

> ". . . were able to clearly define the economic assumptions that form the basis for its load forecasts and indicate how they differ, if indeed they differ at all, from those which form the basis for the balance of the rate submission."

He also observed that the load forecast was based on regional input which is almost two years old and did not anticipate the effect of Hydro's new marketing program or the time-differentiated rate proposal. He noted that the unallocated load adjustment, a purely judgemental assessment, represents the approximate equivalent of four years growth in load. Mr. Armstrong concluded that, if the Board accepted the Chase assumption for Ontario GPP, the revenue requirement would be reduced by $54 million.

Fuel and Fuel-Related Issues

Board Counsel drew attention to the evidence that the effect of the coal down-sizing program in 1984 would reduce the level of power purchases from Quebec and increase the revenue requirement by $10 million. He agreed that Hydro

had successfully dealt with the Board's H.R. 11 recommendation that Hydro supply coal contract details. Mr. Armstrong considered, however, that Hydro had understated the potential for secondary sales to the states of New York and Michigan. He cited as reasons for this conclusion; that the in-service dates for two new generating plants in Michigan would be delayed beyond the date estimated by Hydro, and that Hydro's Economics Division and Chase are forecasting higher oil prices and some economic recovery in the U.S. in 1984, which should promote sales.

Mr. Armstrong also recommended that the Board use a secondary sales price of $38.9/MW.h rather than Hydro's revised price of $36.0. In summary, he said that revenue from secondary sales should be increased by $21 million.

Board Counsel noted the Board's past comments on the costly problem of the locked-in energy at the Bruce Generating Plant due to inadequate transmission capacity, and submitted that the Board should again report on the urgency of this matter.

Mr. Armstrong submitted that Hydro had successfully shown that the Nuclear Power Demonstration Project at Rolphton should be continued, but he submitted that the existing agreements with Atomic Energy Canada Limited for the Rolphton and Douglas Point Plants should be re-negotiated on a basis more favourable to Hydro's customers.

He recommended that the Board accept Hydro's accounting policies for the cost of commissioning energy; the pricing of power used internally; and, the costing of steam used in the production of heavy water.

Board Counsel said that Hydro has historically tended to under-estimate the amount of nuclear generation and to over estimate the amount of coal-fired generation in a given year. His analysis of the evidence led him to conclude that the electrical capacity factors for both the Pickering and Bruce 'A' Nuclear Plants are understated by 2 percentage points for 1984. The result of this adjustment would be a reduction of $14 million in the revenue requirement. Based on the experiences of Pickering Unit 5, and a shortage of skilled labour, Mr. Armstrong concluded that Hydro was optimistic with respect to the in-service date for Pickering Unit 6 and Bruce Unit 6. Assuming a one month delay in the in-service dates for these facilities, Mr. Armstrong submitted that the 1984 revenue requirement should be reduced by $21 million.

Board Counsel observed that a review of the appropriate level of inventory for nuclear fuel for 1984 was somewhat academic as Hydro's evidence was that it would not be possible for Hydro to achieve a lower level than the ten month target inventory which it considered appropriate. He also noted that Hydro's analysis indicates that meaningful risk analysis cannot properly be applied to the determination of appropriate inventory levels.

Operations, Maintenance and Administration Costs

Board Counsel submitted that it was virtually impossible to scrutinize effectively the multitude of programs and expenditures which comprise OM&A costs. He acknowledged the 12 percent reduction Hydro had made to its original 1984 budget but disagreed with respect to the characterization of programs which were postponed. As an example, he noted that the delay in the second transmission line from Bruce was incorporated in the reduction and he considered it ironic that the inability to proceed with this critical facility because of a lack of regulatory approval would be regarded by Hydro as a budget cut. He also observed that, based on past experience, the 1984 OM&A budget will almost certainly be cut back as Hydro's internal budget process moves towards final approval in the fall.

Specific examples of potential savings in OM&A costs were recommended to the Board by Mr. Armstrong. In dealing with productivity improvement, he submitted that Hydro had inappropriately characterized such activities as mothballing generating units at the Hearn and Lakeview Stations and closing Regional Offices as discrete productivity improvements rather than as items which had already been contemplated when a target for productivity improvement was developed. He recommended that the Board recognize the remaining scope for operational productivity improvement in 1984 by removing $5 million from the revenue requirement in addition to the adjustment previously made for the

mothballing of the Keith Station. He also recommended a further reduction of at least $6 million because of an over-stated provision for major corrective maintenance during 1984, based on experience in the last two years. He further submitted that Hydro's management control system OOOH, with its budget of $900,000, should not be further developed after 1984.

Mr. Armstrong agreed that the marketing strategy developed by Hydro was justified by the over capacity problem, but submitted that the additional $5 million in 1983 and $10 million in 1984 in the marketing budget had not been supported by a detailed analysis or adequate evidence. He observed that the specific marketing programs that are contemplated may raise issues of cross-subsidization among ratepayers, citing the electric heating innovations such as plenum heaters and heat pumps. Mr. Armstrong submitted that Hydro should redirect some of the approximately $20 million in its existing marketing budget to these marketing initiatives and that the Board ought to recommend a revenue requirement reduction of $5 million to provide for such a transfer of existing funds.

Mr. Armstrong noted that Hydro undertook a reduction of its overtime costs, reviewed its policy of paying professional staff at the fourth quartile of the APEO salary survey and conducted an early retirement program. He submitted that in tough times Hydro can manage at

significantly reduced expenditure levels and that the management challenge for Hydro will be to employ these cost reduction techniques in more normal times.

Fixed Charges

Mr. Armstrong submitted that the Board had been left with insufficient evidence on which to make recommendations with respect to the adequacy and effectiveness of the control of capital costs by Hydro. While he accepted the cost control procedures up to the point of the release estimate, Mr. Armstrong submitted that there was no clear evidence concerning management control over capital costs at points beyond the release estimate and, in particular, after the definitive estimate and during the course of construction. While he acknowledged that many of the experienced cost increases over estimates were beyond Hydro's control, he said that scope changes, which encompass variances over which management may exercise some capital cost control, account for approximately 13 percent of the total project cost variances of the current major projects - a large sum of money. He submitted that none of the modifications made to date on the principles or process of planning and controlling major capital projects:

> ". . . have any effect upon the control of capital costs during the period after the work has been released."

He said that productivity and cost control were essential elements in Hydro's strategy for the '80's and that little

of substance had been done with respect to initiatives in this area. In summary he concluded that:

> ". . . the Board cannot report to the Minister that Hydro has demonstrated that its control over capital costs is either adequate or effective as of this point in time."

Board Counsel noted the importance of the nuclear and heavy water programs and their cost consequences in 1984 and submitted that the Board was required to examine the decision to defer the completion of Darlington in light of the $917 million being spent on that station in 1984. He considered that equitable sharing of these costs among present and future customers was of major importance. He noted the evidence on the uncertain future of Darlington and stressed the importance of evaluating the proposed accounting policy in respect to extensions to ensure equitable treatment.

The heavy water capital program, constituting $410 million of capital costs in 1984, was reviewed by Mr. Armstrong who noted the different accounting treatment for each of the originally planned heavy water plants at the Bruce Nuclear complex. Because of this accounting diversity the cancellation and deferrment of all but BHWP B had produced differing effects on present and future customers. He concluded that the cost of taking BHWP A out of service in mid-1984 will be borne by future rate payers through the cost of heavy water, while the cost of the cancellation and the "stopping and storing" of BHWP C and D respectively is being shared by present and future customers. Mr. Armstrong

saw no reason for a difference in treatment and submitted that the cost of scrapping BHWP A should be similarly shared. He calculated that the effect of deferring and amortizing the book value of BHWP A over the same period as for BHWP D would be to increase the revenue requirement in 1984 by approximately $11 million.

Mr. Armstrong noted that Hydro carries an inventory of 300 megagrams of heavy water as an operating reserve and, in addition, a future use inventory of a minimum level of 400 megagrams on an annual basis which, Hydro stated, was necessary to provide a contingency supply for nuclear units presently under construction but not yet in service. The operating reserve is charged to current customers, but additional interest is being capitalized with respect to the future use reserve, which is not being depreciated at the present time. Mr. Armstrong submitted that, barring some unforeseen event, the future use reserve will never be required for an existing or presently planned plant and that the current and projected book value of the future use reserve was in excess of fair market value. He recommended that no interest should be capitalized on the cost of the heavy water in the future use and, instead, depreciation relating to that amount should flow directly to the revenue requirement. The effect of this treatment would be to increase net interest by $11 million and depreciation by $2 million in 1984.

Mr. Armstrong submitted that the cost of the Lennox oil-fired generating plant should be amortized over a ten year period as, in his opinion, it will never be returned to service.

This treatment, similar to that accorded Bruce Heavy Water D, would require an increase of $21 million in the 1984 revenue requirement.

Mr. Armstrong submitted that Hydro's progress with respect to a review of cash management had not been adequate. Noting that the Board, in HR 11, reduced the revenue requirement by $1 million as an incentive for quick action, he submitted that it should be reduced again by $4.2 million, the amount of the unrealized savings for 1984. He also contended that Hydro could improve its accounts receivable situation to produce savings of from $8 to $9 million per year which, he said, should be removed from the 1984 revenue requirement.

Financial Policy

Mr. Armstrong submitted that the material filed in support of a number of significant accounting policy changes was completely inadequate and had required the Board to retain its own expert to ensure that the evidence necessary to make an informed set of recommendations was on the record. He expressed agreement with the proposed accounting policy in respect of foreign currency except for foreign exchange gains and losses arising from the early retirement

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of long term debt which, he said, should be amortized on a straight line basis for the remaining life of the particular debt issue being retired. With respect to the policy for rescheduled construction projects, he said that there was not a clear distinction between projects "extended" or "deferred" and that the present definition was not a sufficient basis upon which to determine whether interest should continue to be capitalized. He supported Hydro's proposal for the accounting treatment of plant deferrals and cancellations which is to smooth rates by deferring and amortizing the costs over ten years.

Mr. Armstrong disagreed with the proposed accounting policy on capitalization of training costs stating that, with respect to the effect of training costs on the 1984 revenue requirement, the original $43 million in capitalized costs in Hydro's submission should be reduced to $4 million with the balance being expensed. He accepted the remaining accounting policy changes.

Net Income

Board Counsel accepted as reasonable and appropriate the general principles used by Hydro in its approach to financial soundness and its net income requirement. He noted that Hydro's 1982 financial soundness indicator showed a marked deterioration from 1981 but submitted that:

> ". . . the 1982 results are adequate for the purposes of financial soundness in the present economic times."

He said that Hydro had developed its net income component of the revenue requirement by balancing rate objectives over a three year (1984-1986) period, and that Hydro took the position that any cost reductions identified as a result of up-dated information or in the hearing should not lower rates, but should increase the net income provision.

Mr. Armstrong considered the cash flow coverage ratio to be an important indicator of financial soundness. Hydro has a target cash flow coverage ratio of 1.0 which it forecast it will achieve in 1985 and Mr. Armstrong noted that the final 1984 proposal showed the ratio increasing from .90 to .94. He considered this too rapid an advance and said that, if the 1984 cash flow coverage ratio remained at the level originally forecast for 1983, an improvement over the 1983 revised forecast would result.

Mr. Armstrong concluded that the Board should recommend that Hydro's net income for 1984 be established at $350 million, about the level achieved in 1982 and now forecast for 1983. This level of net income, he said, would provide a debt ratio of .845 (the same as that in 1982), and would produce an interest coverage ratio of 1.15 for 1984 compared to the 1.20 proposed by Hydro. Mr. Armstrong said that this level would give Hydro a materially improved cash flow coverage ratio of .90 compared to the projected 1983 performance of .79 and concluded that, taken together with the other adjustments he had recommended, a net income level of $350 million would produce an average rate increase of approximately 5.6 percent rather than Hydro's 9.8 percent.

Proposed Rates

Mr. Armstrong reiterated the criticisms of Hydro's costing methodology expressed by Board Counsel in H.R. 11 but acknowledged that Hydro had presented its proposals in a coherent and understandable fashion in this case.

In explaining "several significant problems" he found associated with Hydro's proposal for municipal utility rates, Mr. Armstrong said that the time differentiated energy charge provided a price signal to the municipal utility customers which could not be effectively passed on to the ultimate consumer at the retail level. He considered this to be a significant short-coming. He urged the Board to reject the proposed excess demand charge, stating that very few municipal customers experienced an actual peak occurring in Hydro's off-peak as evidenced by the projected revenue from this charge of only $100. He observed that, in those few cases, industrial customers of the municipal utilities would dominate those system peaks and that it would be to the benefit of the utility to have those customers served directly by Hydro. He also said that the excess demand charge was not justified on a cost basis as Hydro is already recovering non-common costs in the municipal rate structure. Otherwise Mr. Armstrong said that the rates proposed by Hydro for the municipal utilities satisfied the principles recommended by the Board in its Costing and Pricing Report and in H.R. 11.

Mr. Armstrong urged the Board to recommend a rejection of the off-peak excess demand charge in the proposed direct customer rates for reasons he had given with respect to the municipal utility rates, and also because the proposal was in contradiction to a planned transfer of $30.8 million from capacity costs to energy costs in the rate design. He gave a number of reasons why this cost transfer was inappropriate saying that it would violate the cost causality criterion enunciated by the Board, would have the effect of penalizing high load factor customers and benefitting low load factor customers, and would promote the use of demand without promoting energy use.

Board Counsel also submitted that Hydro should not implement a proposed impact relief for direct customers as it would result in a level of cross subsidization not appropriate in a cost based rate structure.

Mr. Armstrong also commented on two experimental rate forms proposed by Hydro. He noted that the intermittent rate would require customers to spend several thousand dollars for the necessary metering equipment and would introduce further costs to Hydro in relation to meter reading and administration. He said that the evidence was that the blended rate would not be attractive and he urged the Board to reject it as well, primarily because it violates the accepted principles of rate making. He submitted that no contribution would be made by either rate to the problem of excess base load capacity and said that, since they were flaws in many other ways, the Board should reject them.

Mr. Armstrong's only comment with respect to the rate for other power distributors was that these companies should be included with the municipal utilities at the beginning of the cost allocation process. He also submitted that Hydro ought to be encouraged to pursue the development of seasonal rates and their acceptance by the public.

Mr. Armstrong submitted that the rate form proposed for the direct industrial classes by AMPCO would not be appropriate for the Board to adopt since it was significantly at variance with accepted rate making principles, and because many of the direct industrial customers were unaware of the proposal due to its late introduction in the proceedings.

In summary, Mr. Armstrong submitted that Hydro ought to develop a rate design incorporating the following characteristics:

"1. No impact relief or cross subsidy provision.

2. No excess demand charges.

3. No $30.8 million dollar transfer of capacity cost to peak energy [in] the direct customer class.

4. The distribution companies to be included with the municipals when costs are allocated.

5. Cost differentials for service at different voltage levels the same as those proposed by Hydro.

6. Energy rates equalized for both the municipal and direct classes.

7. Capacity rates adjusted to meet revenue requirements."

The Views of The Ontario Natural Gas Association

Marketing

ONGA's Counsel, Mr. Howe, submitted that Hydro is endeavouring to keep the 1984 rate increase artificially low in order to encourage customers to convert to electricity. This policy, he said, presents serious risks in the longer term to existing and new customers as well as to the people of Ontario. ONGA expressed concern with the expenditures and activities of the marketing branch which, it said, was encouraging the costly increased use of electrical space heating. It also noted that, while Hydro wished ultimately to introduce seasonally differentiated rates, electrical space heating and the "GO ELECTRIC" theme encourage additional sales in peak periods as well as in the off-peak and shoulder periods. Mr. Howe also suggested that some municipal utilities will be required to up-grade their distribution facilities to handle the additional peak load and that this would lead to higher rates in the future. ONGA contended that Hydro should defer any such marketing campaigns until it had adequately studied the potential effect on its operation and on those of the municipal utilities.

Financial Policy

Mr. Howe submitted that the result of the total decreases in Hydro's 1984 operating costs due to its

accounting policy changes amounts to $175 million. He said that, with the exceptions of policies relating to foreign currency and irradiated fuel, these changes had been motivated by a desire to keep rate increases artificially low in the short term to encourage the marketing campaign. ONGA stressed that costs of a current nature should not be deferred to the future and urged the Board to recommend that such proposed accounting changes be rejected.

Net Income

Mr. Howe stressed the importance of Hydro achieving an interest coverage ratio of not less than 1.2 times and maintaining its debt ratio at or below the current 84.5 percent, and asked the Board to recommend an improvement in these ratios in the future. Noting that projected net income for 1984 of $452 million would decrease to $240 million in 1985, ONGA submitted that Hydro appeared to be over-riding the importance of its financial soundness in order to keep rates artificially low, a policy which it submitted, "is not in the best interest of the customers, the Province, the general public, and Hydro itself." ONGA submitted that Hydro will only be able to ensure that the Province's prime credit status will not be impaired by improving its financial soundness.

Proposed Rates

ONGA submitted that, despite Hydro's unique position as the regulated and the regulator, it should adhere to sound principles of establishing rates and that, in the present proceeding, it had failed to demonstrate that its experimental intermittent and blended rate proposals are non-discriminatory, reasonable, and in the public interest. Significant disadvantages related to those rates had emerged which, ONGA said, included social concerns about the increased use of coal and questions of unjust discrimination. ONGA said that the Board should recommend against the introduction of these rates pending a full examination of their implications.

Conclusion

In summarizing ONGA's position, Mr. Howe submitted that Hydro was facing the risk of significant increases in rates as a result of supply side expansion. Despite Hydro's contention that the only supply issue left is the Darlington Station, the future of which has been determined by government policy, ONGA submitted that the Board should ask to review the capital expansion program in a public hearing in order to ensure:

> ". . . that Hydro's 'demand management' initiatives have merit over alternative solutions to Hydro's excess capacity."

Mr. Howe also urged the Board to recommend the establishment of a procedure whereby the retail rate setting process could be examined in public.

The adjustments proposed by ONGA to Hydro's rate proposals would have the effect of increasing the 1984 revenue requirement by $128.3 million.

Views of Energy Probe

Introduction and Forecasting

Energy Probe submitted that equity among present Hydro customers and between present and future customers was a major issue and it concluded that Hydro was embarked on a policy of deferring costs which should be borne by present customers. Mr. Poch said that the effect of this policy, in addition to creating generational inequities, would be to:

> ". . . encourage customer investment to utilize electricity, particularly for heat sensitive applications."

This would result in future customers facing heavy rate increases.

Mr. Poch drew attention to Hydro's consistently optimistic load forecasting, contending that, despite Hydro's objections, 20 of its 21 most recent forecasts had been too high. He said that the risk associated with such optimism exacerbates the potentially heavy rate burden on future customers and will lead to a decline in financial soundness.

Fuel and Fuel Related Matters

Energy Probe urged the Board to recommend an enlarged coal inventory at all coal-fired stations to provide some degree of protection against the risks which it believed were associated with Hydro's rapidly increasing reliance on nuclear energy.

Mr. Poch also submitted that a proposed reduction in Hydro's provision for irradiated fuel management and nuclear decommissioning costs was premature and was an example of Hydro's "new and pervasive bias in accounting" which shifted costs and risks to future customers.

Secondary Sales

Energy Probe submitted that Hydro had established an artificially low price for exported electricity which did not incorporate the social costs associated with nuclear generated power or acid rain pollution. Also not considered, in Energy Probe's view, were costs associated with the risks of nuclear technology and unforeseeable maintenance resulting from increased plant utilization.

Operation, Maintenance and Administration

Hydro's new marketing strategy was characterized by Energy Probe as one which was misleading customers and enticing them to increase heat sensitive load. Mr. Poch submitted that this strategy is in direct conflict with government energy policies related to energy conservation,

energy self-sufficiency, and acid gas reduction. He stressed the lack of detail available about the marketing plan and submitted that, among other risks, the policy would increase pressure on system expansion and future rates and would make Hydro more reliant on United States coal. Mr. Poch submitted that as a result of the uncertainty and the conflict with government policy the amounts budgeted were "excessive in the extreme".

Fixed Costs and Depreciation

Energy Probe submitted that the Board should recommend that construction of the Darlington Nuclear Generating Station be reviewed in a hearing because of its future impact on rates. Mr. Poch said that it was essential that the Board consider the effect of the likely further deferral or cancellation of the project.

Financial Policy

The philosophy inherent in the accounting policy changes, as perceived by Energy Probe, was to increase costs for future customers. It said that Hydro had apparently chosen none which would benefit future customers even though many cost allocation items could be treated in a variety of ways. Energy Probe submitted that the Board should not recommend accounting changes which resulted in this shift in cost incidence.

Energy Probe submitted that the effect of Hydro's proposal to capitalize nuclear training costs and to depreciate them over 40 years, spread the cost over present and future customers, but left future customers with the added cost of replacing staff. It contended that such expenditure should remain on a current basis or that the depreciation period be the average employee's length of service to fairly match benefits and expenditures.

Energy Probe submitted that Hydro's insurance coverage on its nuclear installations was grossly inadequate, in that it did not protect against the risks involved in the reliance on nuclear technology, and unfairly shifted costs to future customers. While Energy Probe recognized that the tritium removal facility will be used in connection with both the Darlington and the Pickering Nuclear stations, it observed that most of the heavy water to be treated in the initial years will be from the existing Pickering plant and therefore present customers should be charged with its capital and operating costs.

Energy Probe did not agree with the proposed increase from a 30 to a 40 year life expectancy for nuclear plants, as it was the "outside limit" of depreciation periods for such plants in North America. Mr. Poch submitted that the risk of major unforeseen mishaps or design failure had not been considered.

Net Income

Energy Probe agreed with the evidence of Mr. Kierans that Hydro's financial ratios must be improved and Mr. Poch urged the Board to recommend an improved net income for 1984 in order to retain financial soundness.

Proposed Rates

Energy Probe opposed the decision not to introduce seasonally differentiated rates and contended that the time-of-day rates which were proposed could increase future peaking problems, since most of the heating hours in the coldest temperatures fall in the off-peak period. Mr. Poch contented that seasonal rates would create price signals which would help offset this effect and would more accurately reflect the cost of generation in different time periods. Energy Probe urged the Board not to recommend time-of-day rates without seasonal differentiation.

Mr. Poch submitted that the blended rate and the intermittent rate proposal should be rejected since both offended the costing and pricing principles which the Board had enunciated. He said that both experimental rate proposals were based on short-run marginal costs which would result in discrimination among customers and would be incompatible with other rates.

Energy Probe considered that the AMPCO rate proposal for direct customers, while useful analytically, was inappropriate as it would mitigate against future rate

flexibility by Hydro and the Board. It disagreed with Hydro's proposed impact relief in the direct customer class as it would result in cross subsidization.

A request for costs was made by Energy Probe based on a submission that it has contributed significantly to the rate review process. Mr. Poch asked the Board to award costs based on five days preparation in advance of the hearing, twenty-five full days of hearings, and five days for the preparation of argument.

View of the 115 kv Group

Dr. Zimmer doubted that Hydro could achieve its goal of "no real price increases in electricity over the next decade" in the light of the rates proposed for 1984. He noted that Hydro proposed to spend $12 million on anti-pollution control modifications at the Nanticoke Plant and speculated that the generation cost increases which will result from attempts to reduce sulphur emissions will eventually cause the plant to close. He considered that Hydro would be faced with much greater expense if it was seriously contemplating meeting the stringent emission standards which could be required.

Dr. Zimmer questioned Hydro's land expropriation tactics and said that, despite its disclaimer, it was in the real estate business and would be more extensively involved if the transmission line expansion program proceeds. He noted the importance of reasonable electricity rates to the

competitiveness of Ontario's farming industry and the serious repercussions of the proposed 9.8 percent increase. He submitted that the cost of 500 kv transmission lines should be allocated on a non-common basis as they are built primarily to meet urban demands for power. He also considered that Hydro's marketing projections were optimistic, particularly with respect to secondary sales.

Views of Hydro's Management and Professional Employees Society

Mr. Green, counsel for the Society, focused his attention on the operation, maintenance, and administration costs projected by Hydro. He explained the nature of the Society and its association with Hydro in labour relations, and submitted that the utilization of human resources was an extremely important aspect of OM&A costs.

Mr. Green contended that the Society had acted in a responsible way in response to Hydro's request for voluntary cut-backs and had put forward schemes which had resulted in cost savings of $4.7 million for 1984. He said that Society members were essential to the future success of the marketing strategy which had been developed and presented at the hearing.

Mr. Green said that the Society did not want to become certified because of the adversarial nature of future labour-management negotiations which could result, including the possibility of costly strikes and interruptions of

service. He contended that Hydro's current method of negotiations with the Society was damaging to long-term labour relations and he urged the Board to recommend that Hydro adopt an approach to human resources and their utilization, particularly in the managerial and professional area, which will:

> ". . . ensure long-term reasonable costs and security of service rather than short-term savings."

Views of The Ontario Municipal Electric Association

Economic Outlook

The OMEA stated that it generally agreed with the economic forecast presented by Hydro and with the conclusion that the monecary and fiscal policies of government, particularly in the United States, would continue to be a major source of economic uncertainty in the short-term future. The OMEA concluded that, largely for political reasons, there would be a general continuation of current economic policies through 1984.

Hydro's forecast of inflation in 1983 and 1984 was accepted but the OMEA believed that, in the period from 1985 to 1991, inflation would be in a range of about 7 percent rather than 9 percent. This lower forecast reflected its view that authorities in North America now recognized the critical nature of inflation control in the economy. The OMEA agreed with Hydro's forecast of unusually high real

interest rates; however, because of its differing inflation assumptions, believed the forecast prime rate of 13.5 percent for the period 1985 to 1991 was 1.5 percentage points too high. Mr. Schwartz said that the OMEA agreed in general with Hydro's exchange rate forecast but submitted that Hydro's forecasted level of Ontario GPP for 1984 should be increased by approximately 2 percent.

While commending Hydro for certain methodological changes in its economic forecast, the OMEA continued to recommend that the forecast be provided in a form more similar to the load forecast, and that it include a subjective adjustment in reaching the final projections. The OMEA also recommended that documentation of the interrelationship among the economic variables be made and that there be clarification of the interpretation of the prediction ranges, particularly for the four or five key economic variables. Mr. Schwartz also submitted that the Economic Division should further develop macroeconomic modelling with particular emphasis on the relationship to government monetary and fiscal policies. The OMEA recognized the importance of sensitivity analysis in relating Hydro's projected costs and revenues to changes in the economic environment, and suggested that a retrospective study of the success of sensitivity analysis in predicting such changes be carried out by Hydro and reported on at the next hearing.

Load Forecast

Observing that the economic assumptions underlying the load forecast are not those forming the major part of Hydro's submission, the OMEA submitted that the importance of this difference is that Hydro's current forecast of GPP is considerably lower than the forecast on which the peak and energy projection was made. The OMEA proposed a one quarter of one percent upward revision to Hydro's load forecast to reconcile these differences and the OMEA's own economic forecast. Mr. Schwartz went on to recommend improvements in Hydro's load forecasting and, in particular, said that price elasticity information should be enhanced by further studies of the effect of changing economic conditions, technological changes, and other energy prices. The effect of the one quarter percent adjustment proposed by the OMEA would reduce the 1984 revenue requirement by $4.8 million.

Secondary Sales

The OMEA submitted that secondary sales in 1984 would be made at a higher price than that forecast by Hydro. It recommended that the Board adopt Hydro's level of forecast sales at the original price of $38.9/MW.h as the most reliable estimate. The OMEA urged Hydro to support changes in laws prevailing in some States which, through profit prohibition, discouraged the import of electricity.

The OMEA noted that Hydro's high coal inventories had reduced its ability to purchase cheaper energy from Quebec and Manitoba and recommended that the Board urge Hydro to seek aggressively to reduce its coal contracts in 1984, as it had in 1983.

Nuclear and Hydraulic Production

Mr. Schwartz said that the evidence suggested that both nuclear and hydraulic production forecasts should be revised upwards, thereby increasing net income. He said that Hydro had consistently under estimated nuclear power production and the OMEA concluded that the electrical capacity factor for the Pickering Plant should be set at the 1978 to 1982 average of 86 percent for the purpose of estimating the revenue requirement. Similarly, the OMEA believed that the electrical capacity factor at Bruce should be set equal to the 1983 performance of 79 percent rather that at 75 percent as proposed. These adjustments to nuclear production would result in a reduction in the revenue requirement of $28 million. The adjustments to hydraulic production would decrease the revenue requirement by $12 million.

While the OMEA agreed with Hydro's assumption that the current water rental lease with the Province would be continued, it submitted that the rental not be priced on the basis of changes in the consumer price index but on the 5 percent restraint limit established by the Ontario Inflation Restraint Program. The result would be a reduction in the revenue requirement of $.5 million.

Mr. Schwartz contended that Hydro had not presented reasons for the retention of the Nuclear Power Demonstration Plant at Rolphton and he gave his opinion that the age of the NPD made it less likely to be useful in detecting potential operating difficulties in the newer nuclear units and therefore its function as a test plant was significantly diminished. The OMEA further contended that the NPD is not large enough for a training site for the development of key personnel and that its costs were no longer justified. Mr. Schwartz submitted that either the agreement with AECL should be renegotiated to the advantage of Hydro or the plant should be closed and fully decommissioned no later than 1988.

Mr. Schwartz said that Hydro's response to the Board's recommendation that it reconsider its accounting policy on costing commissioning energy was nothing more than a simple restatement of earlier positions. The OMEA concluded that this costing methodology subsidized future users at the expense of current users and recommended that the revenue requirement be adjusted downward by $53.4 million from the $72 million amount projected by Hydro.

Operation, Maintenance and Administration Costs

The OMEA considered it crucial that Hydro continue to control rate increases and said that this could be done primarily through countering pressure for increased OM&A expenditures. Mr. Schwartz submitted that Hydro must

continue to show leadership in this respect, and that its operations must be downsized and every expense controlled.

The OMEA acknowledged the progress made by Hydro in controlling OM&A costs, noting productivity monitoring, audit improvements, compensation restraint, and improvements in the system for evaluating and post-appraising capital projects. Mr. Schwartz contended, however, that an analysis of 1984 OM&A costs would show, after the elimination of the effect of changes in accounting policies and the changed status of several major projects, an increase of 9.4 percent over 1983 results, a level which is 2.4 percent above the expected general rate of inflation. The OMEA concluded that this rate of increase would eliminate much of the progress which Hydro had made in 1983.

Mr. Schwartz submitted that the Hay system used to set senior management compensation was not appropriate for Hydro. He referred to the subjectivity of the process noting that the accountability factor in the Hay system apparently created an incentive for "empire building" by managers since budget size was related to salary level. He also contended that the pool of companies used by Hydro in the system severely under represents the public sector, and pointed out that it was contrary to the policy Hydro proposed to adopt for the setting of engineering salaries.

The OMEA also submitted that Hydro's inclusion of automatic inflation escalation in the OM&A and the capital budgets was contrary to the goal of increasing efficiency

and minimizing costs. Mr. Schwartz said that the responsibility to demand the most favourable price had not been delegated to the operating departments and:

> ". . . no one is held accountable to control the level of escalation rates within the department."

The OMEA submitted that the complexity of detail and the number of programs included in the OM&A budget made it impossible to recommend specific shifts in priorities or specific reductions. Faced with this difficulty, it said, the Board and the intervenors could only recommend broad cuts in the OM&A budget or accept Hydro's position that its proposal is the "irreducible minimum" needed. This second alternative must be rejected, Mr. Schwartz said, particularly since Hydro itself had cut its 1983 OM&A budget by $100 million below that presented to the Board last year. The OMEA submitted that each year Hydro should file a summary of the OM&A programs which would be affected, and the nature of the effects if the total OM&A budget were to be reduced or increased by a set percentage. Mr. Schwartz said that, without such a detailed submission, the Board and the intervenors are left with no alternative but to recommend broad and non specific cuts in the OM&A budget. He submitted that for 1984, the Board should recommend an OM&A budget cut of $20 million to bring the budget increase closer to the real increase in 1983, after allowing for accounting changes.

Dealing with specific components of OM&A costs, Mr. Schwartz expressed approval for the tightening up of the control on corrective maintenance, but disagreed with Hydro's proposed budgeted amount for this activity. Given Hydro's evidence of the random nature of the events which give rise to these expenditures, Mr. Schwartz recommended that the 1984 expense be the average of the amounts spent annually between 1979 and 1982, or $13.1 million.

The OMEA expressed concern that electric customers would be asked to assume some of the costs of the development of the Bruce Energy Centre and requested the Board to ensure that Hydro account separately for all costs associated with this development. The OMEA supported Hydro's new marketing program and observed that, if it is successful, it will lower electricity costs.

Mr. Schwartz contended that many of the accounting policy matters considered by Hydro were not clearly determined by generally accepted accounting principles especially in the rate setting environment of a public utility where the timing of the recovery of costs, and the fair allocation of costs among generations of customers, are important issues. In general, the OMEA favoured a conservative accounting approach which would result in more costs being recovered from present customers. However, the OMEA supported all of the proposed accounting policy changes with the exception of those associated with the capitalization of training costs and foreign currency exchange. It disagreed

with Hydro's interpretation of the training cost items which would be covered by the policy, stating that it was essential that only training costs for bringing new facilities into service should be capitalized and depreciated over the life of the facilities. In the opinion of Mr. Schwartz, assurance of this treatment was not found in the evidence. The OMEA concluded that a significant amount of training costs for the Darlington Station proposed for capitalization should not be so classified. In summary, it recommended that because of a lack of information, Hydro should continue to charge all training costs to current operations in 1984, and that complete documentation by its auditors be presented at the next hearing if the policy were to be changed.

The OMEA accepted the policy of amortizing expected foreign exchange losses or gains on an annuity basis using the current exchange rate as the forecaster of exchange rate at the time of redemption of foreign debt. However, the OMEA considered that foreign exchange gains or losses incurred when a debt is retired before its maturity date should be considered a current expense or revenue. Mr. Schwartz said that Hydro's proposed policy in this respect was inconsistent with the conventional treatment of discount premiums or early retirement penalties and, in a period of systematic declines in the exchange rate, would tend to unfairly impact future generations of customers. The OMEA's proposal would result in an increase in the revenue requirement of $7 million in 1984.

Net Income

The OMEA submitted that Hydro's projected net income is too low, particularly in 1985. Mr. Schwartz said that Hydro's objective of providing electricity at the lowest possible cost required decisions involving equity considerations and rate principles which were quite difficult to reconcile. Of particular concern to the OMEA were decisions affecting the impact of cost on different generations of customers such as those involving the capitalization of costs associated with projects which are "not currently undergoing construction in a meaningful sense of that word."

Mr. Schwartz expressed the OMEA's concern that increases in rates above the rate of inflation would further decrease the demand for electricity, but submitted that the theory that lowering the price would increase revenues significantly was not supported by price elasticity of demand data. In addition, he said, such a policy would ensure greater rate increases in the future and would thereby benefit current customers at the expense of future customers.

The OMEA doubted that Hydro could eliminate increases in real terms in the foreseeable future and feared that attempting to achieve this objective would place an unfair burden on future users. The OMEA submitted that moderate real increases in electricity prices should be anticipated and that these future increases be smoothed by increasing net income in 1984. It therefore recommended that the

reductions in the revenue requirement which it believed to be appropriate be partly offset by an increase in net income and recommended a rate increase for 1984 of approximately 7.5 percent.

The OMEA agreed with Mr. Kierans that Hydro should achieve an interest ratio coverage of not less than 1.2 times, that its debt ratio should not increase beyond the current level and that Hydro should attempt to improve both ratios. Mr. Schwartz submitted that this goal was particularly important because the decline in the current and expected future utilization of Hydro's assets, and the continuing excess capacity, decreased the "real equity position" of Hydro's owners, the people of Ontario. He said that any further deterioration of Hydro's financial soundness and net income position must be avoided.

Proposed Rates

The OMEA submitted that there was no new evidence introduced in the hearing which should persuade the Board to reverse its 1982 recommendation that Hydro proceed with the implementation of fully time differentiated rates, including seasonal rates. Mr. Schwartz said that Hydro's concern about the lack of customer acceptance and the perceived discrimination against Northern Ontario customers with respect to seasonal rates had been aired before the Board during the 1982 hearings and were not sufficient to outweigh the sound economic arguments in favour of their

introduction. The OMEA said that there is sufficient data available to clearly demonstrate that there is no discrimination against Northern customers. Mr. Schwartz said that Hydro should work to improve customer acceptability through "a vigorous, sound and factually based" public relations program, but observed that no major change will ever be totally accepted by customers. On the question of impact, the OMEA supported the view that any relief required due to the impact of revised rates is a matter of social policy which should be addressed by government.

Mr. Schwartz told the Board that the OMEA Board of Directors believes that:

> ". . . the only reasonable alternative to time-of-day rates without seasonality is to defer time of day rates until Ontario Hydro feels seasonal rates can be implemented",

and that it felt strongly that time-of-day rates should not be introduced alone because of questions of fairness.

The OMEA recommended that minor modifications to the capacity/energy split proposed for 1984 be accepted, as well as Hydro's proposal to continue the cost pooling of certain distribution stations. It objected, however, to Hydro's proposal to increase the discount for capacity interruptible rates and said that the formula discussed by Mr. Palmer in the hearing should be adopted to ensure smoothing and to eliminate cross-subsidization.

The OMEA recommended that the intermittent and blended power experimental rates proposed by Hydro proceed on a trial basis, despite certain conceptual problems the OMEA

had with them, and urged the Board to consider the issue of customer classification at next year's hearing.

Although it considered the AMPCO rate proposal to be "novel and interesting" the OMEA said that it should be rejected as it did not track costs and was contrary to the Board's definition of fairness. The OMEA also said that its impact on the direct class as a whole should be carefully considered and that it would preclude the customer classification changes recommended by the Board in H.R. 11 and H.R. 5.

Views of the Association of Major Power Consumers of Ontario

Introduction

AMPCO submitted that Hydro was requiring present customers to pay for generating capacity installed for the benefit of future customers and that it could fulfill its cost based rate mandate with a substantially lower rate increase for 1984 than requested.

Economic Outlook

AMPCO said that Hydro's rate request was based on an economic outlook which had been superseded by its Spring Economic Review which showed significant changes in the major economic variables. AMPCO said that the Board should therefore consider the updated economic outlook as well as the evidence of Chase and Dr. Chambers. Noting that Hydro's

forecast of economic growth was the lowest in the evidence, and that its own revisions had increased those growth figures, AMPCO submitted that Hydro's pessimism and conservatism should be rejected by the Board. AMPCO said that the evidence of Chase and Dr. Chambers on interest rate projections was consistent with economic growth and recovery of the business cycle and should be adopted. Mr. Davies said that Hydro had placed too much emphasis on short-term events and had over estimated longer term interest rates.

As a result of its assessment of the economic forecasts, AMPCO recommended that the revenue requirement be based on real growth in the Canadian and Ontario economies of 1.8 percent and 1.9 percent respectively in 1983, and 5.0 percent and 5.1 percent in 1984, and on interest rates one percentage point below those contained in Hydro's Spring Economic Review. AMPCO said that these changes would reduce the 1984 revenue requirement by approximately $14 million.

Peak and Energy Demand

AMPCO expressed concern that Hydro's load forecast is based on outdated data and that an appropriate forecast should have included more recent input from its customers. AMPCO submitted that the load forecast was even more conservative and pessimistic than the economic forecast and should be revised to incorporate real growth estimates of Ontario GPP of 1.9 percent in 1983 and 5.1 percent in 1984. Utilizing a long term elasticity of demand of 1.1, AMPCO

calculated that this increased economic growth would increase the load demand by between 1.6 and 2.2 percent above the forecast by Mr. Higgins. AMPCO submitted that the Board should insist that a clear relationship be established between Hydro's economic forecast and its peak and energy forecast in future rate submissions. AMPCO was also concerned that, despite the new marketing initiative, no marketing target had been established for 1984 and incorporated in the load forecast.

After assessing the impact of the increased sales attributable to lower prices, economic recovery and the new marketing thrust, AMPCO recommended that Hydro's 1984 forecast of primary energy demand be increased by 2 percent.

Accounting Changes and Commissioning Energy

AMPCO submitted that there should be a greater review of possible accounting policy changes, and suggested that the Depreciation Review Committee expand its activities to include all matters of accounting policy, and that the Board of Directors be kept informed of all policies under review. AMPCO nevertheless endorsed the policy changes proposed by Hydro with the exception of that dealing with the translation of foreign currency.

The proposed accounting treatment of commissioning energy costs was considered by AMPCO to be merely a device to increase Hydro's cash flow and it urged its rejection by the Board. AMPCO said it placed a $72 million annual burden

on current customers in respect of generating plant not needed for the foreseeable future. In particular, AMPCO considered the notional cost basis for the commissioning energy credit to be unique, simplistic, and inconsistent in its design and application. AMPCO also submitted that Hydro had not dealt properly with the Board's previous recommendations with respect to commissioning costs.

Excess Capacity

AMPCO submitted it is the problem of excess capacity that requires Hydro to seek rate increases in excess of the rate of inflation. While agreeing that the nuclear expansion program should be maintained, it argued that the program is for the benefit of future ratepayers and that Hydro should fully explore the financial policy options which might result in more closely matching annual costs with annual benefits.

Mr. Davies referred to the evidence that, while Hydro has not determined with any certainty when the generation expansion program will provide net benefits, the Pickering B, Bruce B, and Darlington plants are not required for capacity for some years to come. Mr. Davies also submitted that since the fuel price escalation is moderating and nuclear energy production is becoming transmission and load limited, the pay out period may be longer than now anticipated. This surplus capacity, in AMPCO's opinion, had an adverse impact on the revenue requirement of $266.8 million in 1984.

AMPCO acknowledged that Hydro was attempting to address the front-end loading problem and that some of the accounting changes proposed for 1984 were in the right direction. However, in AMPCO's opinion, conventional methods of rate regulation did not provide an equitable matching of annual costs and benefits in Hydro's unique circumstances. AMPCO concluded that a full public examination of the financial policy options for matching the costs and benefits of generating stations was required.

Net Income

AMPCO stressed the importance of the establishment of Hydro's net income level submitting that, if it is too low, the financial position may be damaged, and, if it is too high, current customers tend to be penalized. It is AMPCO's view that when Hydro is able to utilize its excess capacity its financial position will strengthen, and it took the position that unnecessarily high levels of net income would postpone that improvement. Mr. Davies warned against placing undue emphasis on financial ratios for any one year, noting that institutional investors and credit rating agencies focus on the longer term.

AMPCO agreed with Hydro that the two primary indicators of financial soundness are the interest coverage ratio and the debt ratio, and said that the so-called quality of interest indicator and the cash flow coverage ratio introduced in evidence this year are closely tied to the capital

construction program, and will improve more or less automatically when the current capital expansion phase is concluded. AMPCO noted that Hydro had not established a specific target for the debt ratio in its review of net income targets, but had placed special emphasis on providing a cushion above the capitalized interest element. AMPCO found this to be "rather confusing and unwarranted."

AMPCO recommended that the net income level be set to maintain the financial position of Hydro through 1985, at which time the construction program will have been largely completed and the borrowing requirements reduced. It recommended an interest coverage ratio of 1.15 rather than the 1.18 suggested by Hydro which, it said, would maintain the present debt ratio and would reduce the revenue requirement by approximately $69 million and the rates by 2 percentage points. AMPCO stressed the benefits to the Province and to Hydro of such a policy, submitting that utilization of electricity and the excess capacity would be enhanced with direct benefits to Hydro's customers and that there would be a clear indication of the Province's policy of fighting inflation and strengthening the economic recovery.

Rates

In AMPCO's opinion, Hydro had failed to address the Minister's concern regarding the economic impact of time-differentiated rate proposals and it said that it was inappropriate to make the drastic changes proposed without a

clear indication of public acceptability. It also said that revised rate forms should not penalize rate payers for consumption patterns which had developed without time-differentiated rates. AMPCO particularly objected to the continuing use by Hydro of its composite peaking plant (CPP) methodology and its effect on the demand-energy split. In AMPCO's opinion Hydro's evidence with respect to the impact on the various industrial sectors was confusing and inadequate, and it feared that the impact on AMPCO members would be considerably in excess of that estimated.

Hydro's proposed impact relief scheme was considered by AMPCO to be a form of cross-subsidization within the direct customer class which temporarily masked the real impact of its proposal. It submitted that time-of-day rates should be available to all large (over 5,000 KW) industrial customers of Hydro and of the municipal utilities under similar terms and conditions. It also recommended that the Board seek authority to examine the extent to which consistent policies are followed by Hydro and the municipal utilities in establishing time-differentiated end use rates.

AMPCO recommended that Hydro conduct a survey to determine whether there is preference among its customers for a 60 minute discrete demand interval rather than the proposed "moving window" concept. Hydro's experimental blended and intermittent rates were supported by AMPCO as worthy of investigation, but it noted that the major emphasis must be on increased firm industrial power sales.

AMPCO submitted that the CPP methodology was arbitrary and manipulative and had been revised in the direction of increasing the energy component of costs. It predicted that more modifications would be necessary to the CPP methodology and that rate instability would result.

Messrs. Leighton and Kidd introduced a diurnal rate proposal for direct customers which, AMPCO submitted, would meet the objectives of recovering the revenue requirement, would have minimum impact on customers with normal consumption characteristics, and would provide appropriate price signals to customers. Its proponents said it would preserve the present demand-energy relationship for the direct customer class and would contain a lower energy price differential than proposed by Hydro. Also incorporated was a rate modification to provide fair treatment for low load factor customers. Mr. Davies submitted that the AMPCO proposal was preferable to the Hydro proposal based on the CPP methodology which did not properly incorporate considerations of fairness and customer acceptability and which departed from the integrity of the existing cost allocation process. He said that the criticism that the Leighton & Kidd proposal was not consistent with costing and pricing principles recommended by the Board was unfounded and submitted that CPP was a costing methodology, not a rate principle as suggested by Mr. Armstrong.

POOR

QUALITY

ORIGINAL